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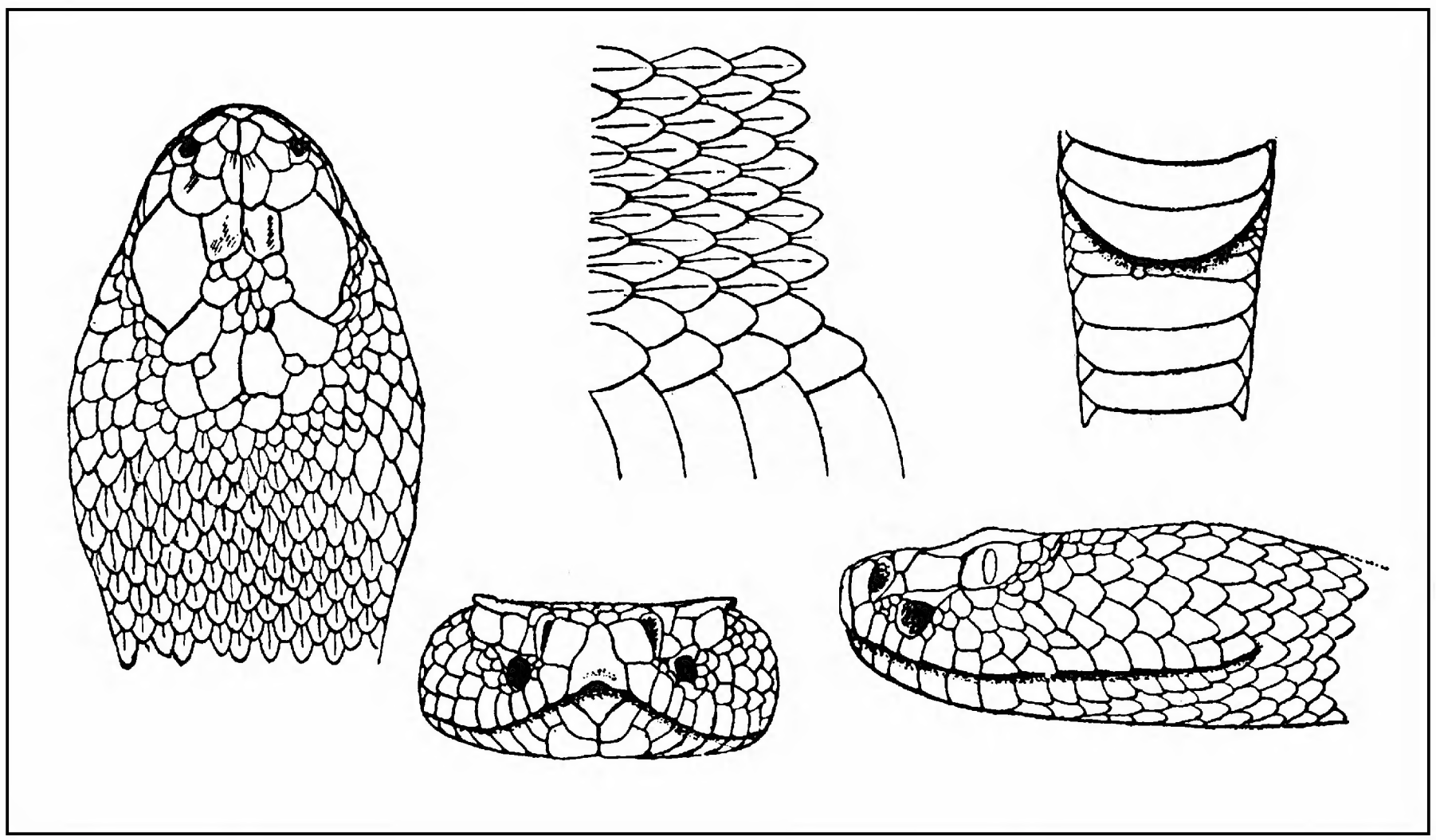

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Forensic Herpetology II: The McMartin Preschool Child Molestation Case and Alleged Animal Sacrifice and Torture, Including Reptiles . . . . . Bayard H. Brattstrom 253

Male–Male Copulation in Captive Mojave Rattlesnakes (*Crotalus s. scutulatus*): Its Possible Significance in Understanding the Behavior and Physiology of Crotaline Copulation . . . . . David L. Hardy, Sr. 258

A New Parasite Record from the Tiger Salamander (*Ambystoma tigrinum*) . . . . . Dreux J. Watermolen 262

HerPET-POURRI . . . . . Ellin Beltz 263

The Tympanum . . . . . Dr. Roger Conant; Stephen L. Barten, D.V.M. 266

Unofficial Minutes of the CHS Board Meeting, November 13, 1998 267

Herpetology 1998 268

Advertisements 269

Index to Scientific Names of Amphibians and Reptiles for Volume 33 (1998) 271

Author–Title Index for Volume 33 (1998) 274

News and Announcements: 1999 CHS Herpetological Grants Program 276

Cover: Mojave rattlesnake, *Crotalus scutulatus*. Drawing from "The Crocodilians, Lizards, and Snakes of North America" by Edward Drinker Cope, 1900, Part II of the Annual Report of the U.S. National Museum for the Year Ending June 30, 1898.

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Forensic Herpetology II: The McMartin Preschool Child Molestation Case and Alleged Animal Sacrifice and Torture, Including Reptiles

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The longest and most expensive trial in the history of Los Angeles, California, was not the O. J. Simpson trial, but the McMartin Preschool child molestation and animal sacrifice case.

In that case, Raymond Buckey, his grandmother Virginia McMartin, his sister Peggy Ann Buckey, his mother Peggy McMartin Buckey, and three teachers at the preschool were charged with sexual molestation of children under their care. They were also charged with ritualized animal abuse and ritualized animal sacrifice, supposed to have been used to frighten the children into not telling about what happened. The rituals were to have included birds, rabbits, turtles, and a horse. The case was covered extensively, both in print and in the visual media, including an HBO Movie.

Briefly, the mother of a boy enrolled at the McMartin Preschool believed that her two-year-old son had been molested at the school, and in a paranoid panic, sent a letter to the Manhattan Beach Police (and to the parents of other children at the school?). The police, in turn, sent letters to parents of the children at the school asking them about the possibility of any sexual molestation at the school. During the entire time span of the case, little attention was paid to the fact that the mother had been institutionalized several times for mental problems, and, if her son had in fact been molested, it might well have been that her husband was responsible and she was trying to pass blame to the school. This mother died on December 19, 1986. When questioned later, other children said that they had been molested. There was a great deal of media hype and it was not until near the end of the trial that it became clear that the person who questioned the children, Kee MacFarlane, had only minimal training in the field and that she was, in fact, the girl friend of the TV reporter who first broke the story. The questions she had asked were leading and there was no medical evidence of molestation. We know now that both children and teenagers will tend to tell questioners in these situations nearly anything they think the questioner expects to hear (Gelman, 1989). Slowly, other stories emerged from children, parents, and the media about gruesome animal sacrifices. This is the point at which I came into the case. I was asked to identify bones dug up in the yard of the preschool by the office of the District Attorney for Los Angeles, California. Problems of being an expert witness and testifying in court are discussed elsewhere (Brattstrom, 1998; Ayala and Block, 1993; Foster et al., 1993; Lunney, 1992; Neufeld and Coleman, 1990).

Legal Details of the Case

The case took over seven years: 18 months of preliminary hearings, a three-year trial, and a second shorter trial, at a cost of $13–17 million to the County of Los Angeles. Raymond Buckey was in jail for five of the seven years, about the same amount of time he would have served had he been found guilty and given a 10-year sentence for the crime. Neither he nor any of the other defendants was ever convicted on any of the charges.

The original charges were filed and the prosecution of the case began in the middle of the political campaign of District Attorney Robert Philobosian and the case continued into the term of District Attorney Ira Reiner. In the first trial, the Prosecuting Deputy District Attorneys were Roger J. Gunson and Lael R. Rubin; in the second, Joe Martinez and Pamela Ferrero. The Defense Attorneys were John J. Wagner, Paul Baeron, Scott Bernstein, Daniel Davis, and Dean R. Gits. The case (#A7509000, Charge P.C.288a) followed an initial complaint on August 12, 1983, and the arrest of Raymond Buckey on September 7, 1983. The initial indictment, which was filed on March 22, 1984, included 115 counts of child molestation and conspiracy, and was filed against seven people: Raymond Buckey; his sister Peggy Ann Buckey; mother Peggy McMartin Buckey; grandmother Virginia McMartin; and three teachers, Betty Raider, Babette Spitler, and Mary Ann Jackson. Virginia McMartin and Peggy McMartin Buckey were co-owners of the school. On May 23, 1984, the District Attorney's office filed a 208-count complaint that superseded the original indictment.

The preliminary hearing for Ray Buckey began on June 8, 1984, and the consolidated preliminary hearing for all seven defendants began on August 17, 1984. On January 9, 1986, Municipal Court Judge Aviva Bobb ordered all seven defendants to stand trial. On January 17, 1986, D.A. Ira Reiner dropped all charges against five of the seven defendants—all but Ray Buckey and his mother Peggy McMartin Buckey.

The mother whose allegations triggered the case was found dead in her home on December 19, 1986. Jury selection began on April 20, 1987, and the trial began on July 13 that year. It wasn't until January 18, 1990, that the verdicts were announced: deadlocked on 13 counts and innocent on all the remaining counts.

A second trial for Raymond Buckey, on eight of the 18 deadlocked charges, began on July 27, 1990. This ended with a deadlocked jury and, consequently, a mistrial. Most of the jurors in this trial had voted for acquittal. At this time Ray was 31 years old.

Judge William Pounders presided at the first trial and Stanley M. Weisberg at the second trial.

My report was submitted on November 25, 1986. I was subpoenaed for the first trial (on March 1, 1988), but was not called. I testified in the second trial on June 21, 1990. I also testified in a second, side scenario: an Administrative Hearing (L42932) for Peggy Ann Buckey on October 13, 1988, before

Judge Ronald M. Gruen. All charges against her had been dropped in 1986. Peggy Ann was a teacher in the Anaheim (California) Union High School District. Even though there were no charges pending against her, the district suspended both her and her teaching credentials. Since I was so concerned that the school district, where both my sons had attended, had suspended a teacher's credentials (even though all charges against her had been dropped), I served pro bono for the defense (Peggy Ann), save for gas and parking fees. Judge Gruen recommended, and the State Commission on Teacher Credentialing reinstated her credentials on January 6, 1989. She had to sue again to get her back pay. She started teaching again in classes for the handicapped at Anaheim Union High School in March 1989.

No one was convicted of any charge in any part of this case. Raymond Buckey was sued subsequently about 77 times by different families for around $10 million. He prevailed in every case. Virginia McMartin died December 18, 1995, of heart failure at the age of 88. As a lifelong Christian Scientist she had never received any medical treatment.

The defendants lost the preschool, their life savings, and six defendants lost their homes for court costs and living expenses. They won little compensation in civil suits. In 1991, Virginia McMartin and two teachers won a slander suit against one parent who had claimed, while on national television, that they had engaged in satanic rituals and lewd acts; but they each received only $1 (Myra Oliver, *Los Angeles Times*, December 19, 1995). In civil suits, the defendants sued the city of Manhattan Beach, Los Angeles County, former D.A. Philibosian, the Children's Institute International (the child abuse center that interviewed the children), Kee MacFarlane, Capitol Cities/ABC, and former TV reporter Wayne Satz—for violation of civil rights, conspiracy, malicious prosecution, and defamation of character—for $1 million damages and relief from court expenses, with little success.

The amount of both media hype and legal bungling was enormous. According to Ted Rohrlich (*Los Angeles Times*, January 19, 1990), "Most legal experts say that the McMartin Preschool molestation case was mishandled from the beginning, calling the 6-year (sic) old case a 'fiasco,' 'a worst-case scenario' and a prime example of 'Murphy's Law,' the maxim that says anything that can go wrong, will. . . ." The media hyped the case up to almost 400 children alleged to have been molested at McMartin Preschool and 1200 in a South Bay, Los Angeles County, preschool molestation, kiddy porn ring, and satanic cult (Shermer, 1997). In the end, the case dwindled down to two defendants and 11 children. Again, not one person was convicted of a single charge. As one example of what happened: a 10-year-old boy testified at the preliminary hearing and identified *everyone* from the city attorney to a movie star, a priest, and four nuns as among his molesters. He painted a verbal picture of marching to a cemetery where they dug up corpses with shovels and pickaxes. After the first trial, the media did do some public self-criticism. For example, Jess Marlow, KNBC-TV news anchor (*Los Angeles Times*, January 19, 1990) said, "Even at the beginning, it seems to me, there were some red flags that should have alerted reporters to the possibility that mass hysteria was at work in the case." The press was not very aggressive about trying to examine the prosecution case, though they tried. Superimposed upon all this was an election contest between D. D. Philobosian and the eventual winner, Ira Reiner, for district attorney. The latter would try to run for state attorney-general later, in the middle of the second trial. The publicity surrounding the McMartin Preschool Case had a significant negative impact on Reiner's campaign (Paul Feldman, *Los Angeles Times*, July 28, 1990), just as it did on Philobosian (who had filed the original indictments) in the 1986 race for District Attorney. Most people seem to have forgotten that, according to the law, one is innocent until proven guilty. Assuring the innocence of defendants is as important as proving them guilty. My testimony helped prove the innocence of the defendants on animal abuse and killing charges.

My Involvement in the Case and the Identification of Alleged "Sacrificed" Animals

After a query and recommendation from a former student, I was hired to examine the material dug up in the backyard of the McMartin Preschool, along with photos taken at the removal. The former student worked in a forensic laboratory associated mostly with biological samples. I was hired through John Velverde, Senior Investigator, Bureau of Investigation, Office of the District Attorney, County of Los Angeles, and asked to make a study as to how the animals had died. In November of 1986, I received, under locks and signatures, six boxes from locality KPI 86-203, one set of "defense photographs" and one set of "prosecution photographs." They were sent from the district attorney via Keith P. Inman, Forensic Science Services. With some trepidation and an expectation of finding butchered or damaged bird, rabbit, turtle, and even horse bones, I opened the boxes in my lab. Primarily, I found four desert tortoise, *Gopherus agassizii*, shells! With heads! I was basically hired by the prosecution to prove their allegations of animal sacrifice, but my examination of the material and some simple experiments proved the defense position that there had been no animal abuse, just as there had been no child abuse.

The Photographs

Clearly, the photographs showed that the people who had removed the tortoises had not had good previous archeological training. The tortoises were together, touching, with the tops of the shells upward, a normal position. Some shells were damaged by the workers' shovels, as evidenced by fresh, yellow, bone breaks. Some of the tortoise bones had become separated. Most of the "prosecution photographs" were taken after the tortoises were removed.

The Material

Wooden box #1 contained two tortoise shells, plastic trays and Petri dishes with tortoise bones. Four cardboard boxes (labeled DA-622 and individually numbered 13–16) contained many bags with diverse contents. One box, labeled DA-622-11 (DA-83P 3874) DC 6-1, contained two tortoise shells and a

bag of bones previously examined by P. E. Hughes, DMV.

The non-tortoise material from the 622 boxes consisted of many bags, envelopes, and vials of backyard junk, including glass, plastic shoelaces, nails, metal, clay, pots, tar, asphalt, seashells, bits of cement (one labeled tortoise shell!), and one seashell misidentified as "dermal scuts." There were a small knuckle bone, labeled pig, a dog's gnawing bone, and a bit of chewed beef rib, cut as beef ribs are cut. The deterioration of this material, including rusting of metal objects, combined with its depth, the style on ceramic cups, and the nature of the garbage material, all suggested an age of 25–50 years before the present. In box #1 there was a breastbone and in another small box a synsacrum of a small bird. Comparison with skeletons in the California State University, Fullerton, collection indicated that they were similar to that of a squab or domestic pigeon, *Columbia livia*. There was no evidence of trauma to the bones. Pigeons are common nesting birds in the vicinity of the site and baby birds often fall out of nests. There was a large canary palm, *Phoenix canariensis*, with roosting and nesting pigeons, at the edge of the yard of the preschool.

Tortoises: Condition, identification, age, and circumstances of death

KPI#1 86-203- Box #1 had two tortoise shells, tortoise bones in Petri dishes, and plastic trays. This box contained sifted soil from the site. This soil was used in the experiments described in the following section. The other large box contained two fairly complete shells of desert tortoises with the scales or scutes falling off. These scutes were on the shell when they were dug up ("defense photographs"). The shells were complete in the photograph, but some of the portions of the shell of the small tortoise had separated or fallen apart since being dug up. There were roots within the shell, around the outside of the shell, and between the scutes and the bones of the shell. These were consistent with the photographs that show extensive roots in the soil from which the tortoises were taken. There was a bit of fungus here and there on those and other skeletal material examined. This may have developed after the shells were dug up.

The Petri dishes contained disarticulated turtle bones: leg bones, neck vertebrae, scutes, and one skull. None of the vertebrae or leg bones are broken, cracked, cut or otherwise damaged. It is extremely difficult to kill a turtle or tortoise other than by crushing. If a person could get hold of and hold onto a head or limb in order to hurt or kill the turtle, there would be some evidence of cut or damage found in neck or limb bones. *None was found.*

One piece of broken shell bone from the large turtle has a clean break surface that is a smooth, almost straight, crack (i.e., not the same color as the surfaces of the turtle bones). Based on the experiment described below, this is consistent with the hypothesis that this break was a post-mortem, post-burial break, and probably occurred with a heavy blow of a shovel or similar object while being dug from the ground (photographs).

KPI#86-203, numbers 1, 2, 3, 4, blue boxes, contained various bits of tortoise bone. One tortoise bone had what appeared to be a post-mortem, post-burial break as evidenced by being lighter in color than surrounding bone. Two small carapace bones from a small tortoise had irregular, asymmetrical holes (located at about the same place in the two bones). These holes were in the thinnest portion of the bone and were consistent with the hypothesis that the bone had not yet ossified in this area, or that the bone had been damaged or diseased by a gram-negative *Clostridium*-like bacteria that is a common pathogen of turtles and tortoises. I had at least one shell of a desert tortoise in the California State University, Fullerton, collection with a de-ossification depression caused by these bacteria and the depression is in the same general portion of the carapace of the shell. So, from this, these holes are not the effect of any trauma as evidenced by their shapes.

622-#11, box with tortoise examined by Dr. Hughes. This box contained portions of the shell, scutes, limb bones, and nontortoise items. Many of the bones of the shell showed light-colored edges that were consistent with photographs indicating being broken apart by persons or by methods of digging up the material. These bones and the leg bones showed no evidence of breakage. As noted by Dr. Hughes, an anterior central portion of the carapace (numbered #4, apparently by Dr. Hughes, and consisting of a precentral bone) had a notch in the bone to the left of the position of the neural or precentral scute. The bone in the notch was the same color as the rest of the bone indicating that the notch was made before burial. This type of notching or wear: 1. is extremely common in desert tortoises; 2. occurs in wild and in captive animals, often because of abrasion on rocks, occasionally by male-male fighting; 3. is one of many ways of marking turtles (another is painting) for identification by pet owners and researchers in their study of wild populations. Some pet owners also drill holes in the back of the shell edge to put a rope or chain on the turtle so that it can't escape. 4. is not a lethal event. Seven of the eight desert tortoises that I looked at in the CSUF collection had notching or abrasion of the same or similar nature in this same portion of the shell.

Shell bones marked #15, 16, 19, and 20, showed evidence of breakage or pulling apart during the digging process, as evidenced by the lighter color of the breaks as compared with the rest of the decomposing shell.

622-Box 15 contained one large tortoise shell, an adult male, that appeared to have been buried for the same length of time as those of the wood box (KPI#6-203) or perhaps longer as the bones were more eroded, the shell bones were more separated, the scutes more worn. On the other hand, this shell could have been in a slightly damper portion of the soil. A bag (717-18) contained leg bones, a skull (complete with the jaw separated from the skull, and neck bones. *None* of these bones were broken, cut, or traumatized. There was no evidence on the bones or shells of preburial trauma. There was no evidence that the tortoises were injured when alive.

Experiments on tortoise shells

Since one tortoise (KPI#86-203, wood box, large tortoise)

had a portion of the carapace of the shell broken off (in a separate box), and even though the smoothness of the break and the light color of the break indicated that the break occurred while being dug up, I decided to do a few simple tests to see how difficult it was to damage a tortoise shell. I used a modern desert tortoise shell (CSUF-#3332) in the experiments; the tortoise had been in the collection for some years and had the scutes off the bony shell, to use. This tortoise was about the same size as the smaller tortoise in this box, and like it, had the posterior portion broken off. I put it into the wooden box, filled up with sand from the site, and arranged so that it looked like the "defense photographs" of the tortoise in place. There was sand inside and around, but not on top of the shell. I hit it with the edge of a knife, tried to cut the shell with the knife, and then hit the shell with the edge of a garden trowel. All this had no effect on the shell; no cuts, no marks, no breaks. Then I hit the shell with the blunt plastic handle (3 cm wide) of a large (250 mm) screwdriver; there was no effect. I took the shell from the box, removed all the sand from and around it, and placed it back into the box, but on top of the sand. I repeated the blows to the shell with the knife and the trowel edge, and attempted to cut it with the knife; all with no effect. When I hit the shell with the handle of the screwdriver, there was some effect. Some bones separated from the rest of the shell along the natural sutures. These suture lines were a white, lighter than the gray of the rest of the shell. One smooth, slightly curved crack appeared curving toward a suture, probably along a weakness in the shell. Again, the color was whitish. I had hit the shell hard and the crack was small. From all this, I determined that it is difficult to damage a tortoise shell! This suggested that the crack and broken bone of the large shell, from the site was done by a heavy blow and/or a heavy instrument such as the large shovel (defense photographs) used to dig up the specimens. It also suggested that the blow was post burial, because of the color differentiation from that of the remainder of the shell. The broken piece fit snugly into the "parent" bone on the shell; it was not weathered or worn as were the separated bones of the shell.

Age and Circumstances of death

The examined turtle material consisted of several complete shells and several portions of shells (decomposed and separated) of desert tortoises, *Gopherus agassizii*, a common "backyard" pet in Southern California.

The complete shells were adult (young adult, Class #4 of Berry's (1984, 1986) shell wear/age classes for desert tortoises; two of these complete shells were female, one was a male. They had been buried for some time. Based on Berry's (1984), "carcass deterioration and disintegration rates" for above-ground tortoises, I estimated that these tortoises had been buried for *more than four years*. Local conditions, soil type, amount of watering, nearby vegetation, exposure to bacteria and insects could change the rate of deterioration. Shells had roots growing over, around, and through them. My experience and the examination of photographs and soil from the site suggest burial for *four or more years*. The McMartins had not owned the preschool four years earlier.

Examination of all the photographs show a scene which looks exactly like what happens often to pet tortoises. They become trapped in the winter hibernation burrows they dig, because of rain, cold, and the collapse of the burrow. Many people as well as preschools have pet tortoises and allow them to dig their own burrow for retreat when the day is too warm as well as for their inactive period in the winter. Unfortunately these burrows often get flooded or collapse due to heavy seasonal rain; the owners may not discover the problem in time. This is a common occurrence in Southern California, but occurs also in the wild. Aggregated shells of fossil tortoises indicate that this has occurred for millions of years. The photographs of the tortoises grouped together, touching, the tops of the shells up, with all of the bones intact (skull, girdles, and limbs) within or near the shells; all are consistent with death in the burrow.

On the stand, I was asked, both in the administrative hearing and in trial 2, why there were four-plus shells and only two heads. I was asked if that didn't prove decapitation before burial. I answered by pointing out the clumsy way in which the workers had removed the material from the site, probably losing heads along the way. Quickly then, while still on the stand, I remembered (Oh, Thank you, Walt Auffenberg!) that fossil tortoises as well as sick or dying ones (like those examined) pull their heads into their shells. I actually found one skull there. Were there skulls in the shells I didn't look into? Were the skulls still in the yard? The material had been returned to the D.A.'s office by then. Surely, I didn't want to suggest that they might have been lost in the D.A.'s office or pulled off by someone after being dug up. I did comment that I had observed no trauma or breaks in the neck vertebrae and pointed out that it is really hard to pull out the head of a tortoise, hold it out, and cut it off!!

Summary and Conclusions

There was no evidence of mutilated or sacrificed rabbits, birds, or horses—only old buried desert tortoises. There was no evidence of preburial trauma. That is, there was no evidence that the tortoises were injured when alive. Evidence from photographs, nature of skeletal material (all relatively complete and together), and lack of preburial trauma is all consistent with the hypothesis that the tortoises died in their burrow due to natural causes such as disease, cold, drowning, and burrow collapse; all common problems affecting captive, pet tortoises. The instances of "injury" to tortoise shells occurred when the tortoises were exhumed. The decomposition characteristics of old shells and bones indicated that the tortoises had been buried for more than four years, long before the preschool was owned by the McMartins.

In trial 2, my time on the stand for the defense was brief. I gave quick responses (both sides had the report I had written for the prosecution. The prosecutor asked a simple question about tortoises that allowed me to get in some asides for the jury and the audience about tortoise conservation. I was followed on the stand by witnesses for the defense; the McMartin Preschool mailman and the Gas-meter man. Both testified that they had not seen any dead horses about the

grounds, nor any dead bunnies, birds or turtles!

Just as there was a lack of needed evidence for molestation, there was no evidence of animal abuse or sacrifice. The jury, though confused by some of the children's stories, agreed; and this trial ended with a deadlock and a mistrial, resulting in an acquittal. This was seven years and 13–17 million tax dollars later.

As an aside to all of us who do research on particular subjects or organisms, you can never tell where or when your expertise or information will be useful to someone in another field or someone working on another organism. Not only my own knowledge (Brattstrom, 1961, 1964; Patterson and Brattstrom, 1972) and experiences, but also comments and data presented in papers on tortoise paleontology by Walt Auffenberg (1974) and Dennis Bramble (1971, 1982) helped me interpret the tortoise taphony in this case. Kristin Berry's work with desert tortoise populations and conservation are important in their own right, but, By Golly!, wasn't it great that I was able to use the "Dead Tortoise Deterioration Scale" (Berry, 1984) to show that the tortoises in this case had died years before the McMartin family even owned the preschool!

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Male–Male Copulation in Captive Mojave Rattlesnakes (*Crotalus s. scutulatus*): Its Possible Significance in Understanding the Behavior and Physiology of Crotaline Copulation

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Courtship in rattlesnakes can be an extended period of highly ritualized behavior (Carpenter, 1986), which may or may not result in copulation. The prevalent description and theory of the behavior and physiology of copulation in crotalines suggests that to be successful male courtship must elicit tail raising and cloacal gaping. Only then is the eversion of the male hemipenis into the female's cloaca during vent apposition allowed (Armstrong and Murphy 1979, pp. 74-75; Davis 1936, Parker 1963, pp. 100-101; Gillingham et al., 1977, 1983; Parker and Grandison, 1977, pp. 50-51; Schuett and Gillingham, 1988). It is implied that timing of hemipenial entry is determined by the female being courted and that intromission is a simple eversion of a non-rigid hemipenis into an open female cloaca.

Copulation between male crotalines appears to be both behaviorally improbable and physically impossible since cooperation by a courted male is unlikely. Here I report male–male copulation in captive Mojave rattlesnakes (*Crotalus s. scutulatus*) and suggest that intromission of the hemipenis in crotalines might occur without active tail raising and cloacal gaping by females or males.

Observations

Three male and two female Mojave rattlesnakes were collected AOR 2–6 mi east of Portal, Cochise County, Arizona, and held in captivity. One male was captured on 15 August 1977, and the other four snakes between 8 and 15 August 1978. Males resided in individual 20-gallon glass terraria and the females in a large, painted, wood–glass cage (57 × 60 × 157 cm). All snakes were maintained at 26–28°C, with a natural photoperiod, water *ad libitum*, and newsprint as substrate.

At 1800 h on 19 August 1978, the three males were placed with the females and removed 4 h later. Simultaneous combat ensued between all three males and continued intermittently. Most of the fighting behavior consisted of "topping" movements (Carpenter et al., 1976) with several episodes in which all three males reared above the substrate with bodies intertwined, each attempting to gain the superior position. The males were again placed with the females 24 h later and all five snakes remained together overnight. Neither combat nor courtship were noted during a short observation period. At 0630 h, 21 August, two males were found joined *in copulo* (Figure 1). The other snakes were coiled separately and were removed. The copulated male's cloaca was markedly distended and rhythmical hemipenial pulsations of the copulating male were observed. They remained joined for at least 5 h, and when checked at 1630 h they had separated. All snakes were sexed by cloacal-tail probing and total body length/tail length (TBL/TL) ratios before and after the described event. The copulating male (TBL 840 mm) had been collected on 8 August, and the copulated male (TBL 780 mm) on 15 August. The times in captivity were 13 and 6 d respectively.

Discussion

In the event reported here, it appears an aroused courting male rattlesnake, stimulated by the earlier presence of females may have been attracted by female pheromones present on the other male's epidermis and the cage substrate, and this resulted in heterecious copulation (see Smith [1968] below). It seems unlikely the copulated male would have been cooperative, suggesting the copulating male rattlesnake inserted its hemipenis into a closed or only partially open vent. Although the male–male copulation in this report occurred in captivity and similar behavior may not be observed in free ranging snakes, it could give insight into the behavioral and physiological mechanics of copulation in crotalines.

Male–male courtship

Shaw (1948) described courtship by a male red diamond rattlesnake (*C. ruber*) of a larger male of the same species introduced into its cage three weeks earlier. The former had been the aggressor in earlier bouts of combat with another male. The courting male used tail searching during courtship of the introduced male and everted its hemipenis for several seconds. Courtship continued for 3 d with the courted male "showing fear, coiling tightly and usually hiding its head within the center of the coil." It was suggested that customary cues for sex recognition failed, and that the introduced male was mistaken for a female.

Male–male copulation

Initial interpretation of adult snakes' interaction in the literature was confounded by failure to accurately determine the sex of the individuals involved. Assumption led to erroneous descriptions of combat between two males as courtship (Lowe, 1948; Shaw, 1948, 1951). Lederer (1931, as translated by Shaw, 1951) reported courtship in cottonmouths (*Agkistrodon piscivorus*) which terminated in copulation lasting 9 h. The copulated "female" died several months later and during necropsy was found to be a male. The previous extended periods of "courtship" may have included combat as well.

Smith (1968) states that copulation between males is aberrant behavior, rarely occurs in nature, and is captivity depend-

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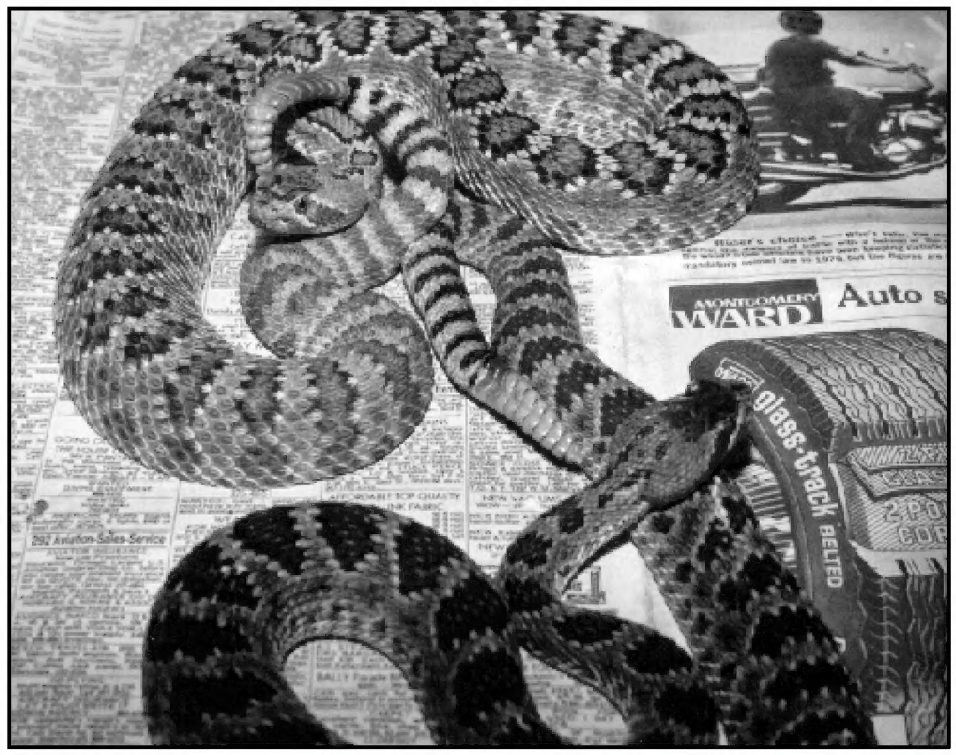

Figure 1. Copulating male Mojave rattlesnakes (*Crotalus scutulatus)* (copulating male in foreground). Photograph by David L Hardy, Sr.

Figure 2. Copulating male and female Mojave rattlesnakes (*Crotalus scutulatus*). Note female's proportionately shorter tail and fewer black rings; compare to Figure 1. Photograph by David L. Hardy, Sr.

ent. He felt it was not true *homosexual* behavior wherein one male attracts another, but rather *heterecious* behavior where sexual discrimination is subnormal, i.e., confused olfactory perception dulled by captivity.

Charles Carpenter observed copulation between two captive male speckled kingsnakes (*Lampropeltis getula holbrooki*) (pers. com., 19 March 1980). He felt penetration was not possible without some sort of cooperation by the copulated male.

Other unusual pairings

Other reports concerning copulation in captivity may also shed light on a male crotaline's ability to copulate without cooperation. Three reports are remarkably similar in that they involve male lanceheads (*Bothrops* [sensu stricto]) copulating with dead or dying female Neotropical rattlesnakes (*Crotalus durissus terrificus*) at the Instituto Butantan in São Paulo, Brazil. Do Amaral (1933) described copulation lasting 11 h between a male jararaca (*B. jararaca*) and a deceased female Neotropical rattlesnake (*C. d. terrificus*) that was in a state of rigor mortis. Belluomini and Hoge (1957/58) reported a similar event between the same species and a dying female *C. d. terrificus*. A third episode between a male urutú (*B. alternatus*) and a dying *C. d. terrificus* was also reported by Schötler (1950). In the first instance, the initiation of copulation was in the early morning and was not observed, so the female may have been alive initially. In these cases it seems likely female cooperation was not required for successful intromission and the female's vent was penetrated by the male's action alone.

Copulation between a female cottonmouth (*A. piscivorus*) and a male eastern diamondback (*C. adamanteus*) has occurred in captivity (Wagner, 1962), and hybridization in crotalines has occurred repeatedly, both in the wild and in captivity. These matings also question the degree of cooperation required during intromission.

Role of tail raising and cloacal gaping by females

Although the behavior during courtship and copulation in crotalines is well described (Armstrong and Murphy, 1979; Chiszar et al., 1976; Klauber, 1956, pp. 682-686; Radcliffe and Murphy, 1983), the exact physiological requirements of the female cloaca and male hemipenis have been seldom documented (but see Murphy and Barker, 1980, below). C. B. Perkins based his observations on rattlesnakes in captivity (as quoted in Klauber, 1956, pp. 683-684): "The forked hemipenis on one side is everted slightly until finally the female's tail is raised and a successful admission is gained." Armstrong and Murphy (1979) describe courtship and mating in captivity based on observations of numerous individuals of 12 species of *Crotalus* and one of *Sistrurus*. The female "raised her tail and gaped the cloaca (as in *C. atrox*, *C. d. durissus*, *C. pusillus*) which often stimulated the male."

Gillingham et al. (1983) reported tail raising and cloacal gaping by captive female western diamondbacks in response to tail-search copulatory attempts by courting males. In six of 22 sexual encounters, cloacal gaping occurred and led to six successful copulations, and in the other 15, only two led to copulation. Schuett and Gillingham (1988) found in captive copperheads (*A. contortrix*) that, "When cloacal-gaping does not occur a male's attempts to insert a hemipenis during TS [tail search] are always unsuccessful and NM [no mating] follows. . . . A male is capable of inserting hemipenis only when a female exhibits cloacal-gaping."

In at least two instances described above (Gillingham et al., 1983), it appears female cloacal gaping was not necessary and intromission may have been accomplished without it.

Descriptions of the muscles associated with the hemipenis in lizards (Arnold 1984) and snakes (Beuchelt, 1936, as cited in Arnold, 1984) emphasize muscles that retract it (*m. retractor penis parvus* and *m. retractor penis magnus*) rather than those that evert it (*m. transversus penis*). However, according to Wöpke (1930, as cited in Arnold, 1986), the hemipenis of *Lacerta agilis* is everted and brought into its functional condition partly by the action of the *m. transversus penis* which contracts, forcing the hemipenis and bulk of the relaxed *m. retractor penis magnus* forward. . . . In fact, erection is usually in two stages: first the stem is largely everted and then in-

serted into the cloaca of the female, then the lobes evert and expand. Movement of the fluids is probably largely responsible for this second phase." Beuchelt (1936, as quoted in Edgren, 1953) concerning snake copulation, ". . . concluded from his studies that the penis is inserted into the female cloaca in stage 1, a 'half-tumescent condition,' and that complete evagination is accomplished after the basal spines have become anchored." Edgren (1953) theorized that evagination was the result of vascular engorgement only, but did not offer any supportive data or observations.

In their classic work on the anatomy of the snake hemipenis, Dowling and Savage (1960) describe the eversion of the hemipenis as having two components: "The lymph and blood first fill the sinus cavities in the basal portion of the hemipenis. At the same time the retractor muscles are relaxed and the propulsor muscles contract to evert the basal portion of the organ. Apparently only the basal segment is normally everted by most species prior to the actual insertion of the hemipenis into the female cloaca. . . . Once the hemipenis has been inserted into the female an increase in blood and lymph pressure evaginates the remainder of the organ." Invagination was also described in several stages: "Initial retraction is produced by the action of the *m. retractor penis magnus*, which inverts the apical portion of the hemipenis. After the apical region is invaginated the *m. retractor penis parvus* retracts the more basal areas until only the base still protrudes. The final stage in retraction is accomplished by deturgescence of the base and contraction of the *m. retractor penis basalis*." They did not cite the basis upon which they made the above comments.

The only detailed description of the act of intromission in a crotaline appears to be that of Murphy and Barker (1980). A captive male Ottoman viper (*Vipera xanthina*) was unsuccessful in 11 attempts at copulation over a 10 min period. The partially tumescent hemipenis was observed to be flesh colored, and was evaginated in less than 0.5 sec and retracted in less that 1.0 sec. Only the basal portion of the hemipenis was extruded into the female's cloaca, and eversion was only seen when the male's vent was approximately 5 mm posterior to the female's vent. This basal portion of the hemipenis increased from 2 to 5 mm in diameter after insertion and during copulation. Coloration of the organ changed from flesh-color to a deep purple due to engorgement of vascular sinuses with blood. The tail lifting posture was initiated by the male and he seemed unable to insert the hemipenis unless the female's tail was vertical. No cloacal gaping by the female was seen. Murphy and Barker's description is of a small, rigid copulatory organ capable of penetrating a small opening before vascular tumescence begins. They suggested the short time interval required to extrude the basal portion of the hemipenis (< 0.5 sec) suggests the initial process of evagination is primarily muscular (rather than vascular) and accomplished with the propulsor muscles.

If cloacal gaping is not always necessary for intromission, less cooperation by the female is required and active insertion of the hemipenis by the male may play an important role. Chiszar et al. (1976) have described a "stroke-cycle" observed in courting massasaugas (*Sistrurus catenatus*) wherein the male massages the female's tail with the curled grip of his tail moving from the vent posterior to her rattle and then back to the original point of his grip. The external act of lifting the female rattlesnake tail off the substrate more than 45 degrees serves to partially open the vent (pers. obs.). This may be enough for copulation, especially if the first portion of the evaginating hemipenis or stalk is of the proper rigidity and shape for penetration into a relatively small opening.

Tail waving or whipping by female crotalines

Rapid tail waving in captive western diamondbacks (Gillingham et al., 1983) was interpreted as possibly a signal to males to continue courting by the distribution of pheromones into the air, and thus not a rejection of the male. Schuett and Gillingham (1988) observed tail waving in courted female *A. contortrix* and also found it was not associated with non-receptivity.

Hayes et al. (1992) observed tail whipping in free-ranging prairie rattlesnakes (*C. v. viridis*) which was interpreted as female non-receptivity. Radio telemetered female blacktailed rattlesnakes (*C. m. molossus*) near Portal, Arizona, have been repeatedly observed in the wild to rapidly wave the tail (tail whipping) and crawl rapidly from the courting male (pers. obs.) which also seemed to indicate non-receptivity. If tail raising and cloacal gaping were necessary for copulation, non-receptive females would find active tail waving unnecessary in preventing copulation. This suggests males might be capable of penetrating a nongaping but stationary female vent, and are successfully thwarted when the female's cloaca is in motion.

Summary

Although male–male copulation is unusual and has been noted only in captive snakes, it should not be assumed that copulating snakes are always of the opposite sex. Tail raising and cloacal gaping by females appears to be the predominant behavior facilitating successful copulation in crotalines. However, male–male copulation in captivity combined with instances of intergeneric copulation, necro-copulation, hybridization, and the observation that the hemipenis can emerge as a slender, rigid organ, indicate a reevaluation of the behavioral physiology of snake hemipenes and intromission during copulation is needed. Detailed observations of normal hemipenial intromission and concomitant female behavior are needed. If further study indicates female snakes do not always determine the proximate time of intromission, such information must be integrated into current theories of sexual behavior, at least for crotalines.

The significance of tail waving and whipping during courtship is not clear at present. Observations of rattlesnakes in the wild indicate it is likely a sign of temporary rejection of the male, perhaps as a mechanism of sexual selection, and that further courtship is required before intromission is gained. Alternatively, it might also indicate the female has already been mated and will not further copulate. If the lack of tail raising and cloacal gaping by the female served to prevent intromission, tail waving would be unnecessary to reject a courting male.

Although normal snake behavior may be modified in captivity (Davis, 1936), herpetoculturists and zoological park staff

have a unique opportunity to make major contributions to understanding courtship and copulatory behavior in snakes.

Acknowledgments

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A New Parasite Record from the Tiger Salamander (*Ambystoma tigrinum*)

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The leech *Placobdella parasitica* is well known as a parasite on a variety of turtles (Moser, 1995; Watermolen, 1996). *P. parasitica* has also been reported as an amphibian parasite on occasion. For example, Nachtreib et al. (1912) listed the central newt (*Notophthalmus viridescens louisianensis*) as a host, Meyer and Moore (1954) report an instance of *P. parasitica* parasitizing leopard frog (*Rana pipiens*) tadpoles, and Waffle (1963) experimentally fed *P. parasitica* on the blood of American toads (*Bufo americanus*). While examining leeches in the Milwaukee Public Museum's collections, I encountered records of an additional amphibian host, the tiger salamander (*Ambystoma tigrinum*).

On 17 March 1973, two specimens of *P. parasitica* were removed from tiger salamanders collected by A. F. Czajka. The capture site was Little Mud Lake, Fond du Lac County, Wisconsin (T13N R19E, Sec. 12). The leeches were deposited in the Milwaukee Public Museum invertebrate zoology collection (no collection number assigned).

The preserved leeches measure 13 and 17 mm in total length and appear to be engorged with blood. Attachment sites on the salamanders were not recorded, and it remains unknown if the leeches were actually feeding on the salamanders or were simply exhibiting a phoretic association. Additional observations could help further elucidate this parasitic relationship.

In addition to the leeches taken from the tiger salamanders, five *P. parasitica* were removed from a painted turtle (*Chrysemys picta*) collected at the same site on the same day, suggesting *P. parasitica* was relatively common at the collection site. These additional specimens were deposited in the Milwaukee Public Museum collection.

While some leeches exhibit a high degree of host-specificity, it is clear from the available records that *P. parasitica* is an opportunistic parasite, capable of using a variety of poikilothermic vertebrate hosts. Two other leeches in the family Glossiphoniidae have also been reported as tiger salamander parasites: *Desserobdella picta* and *Helobdella stagnalis* (Sawyer, 1972; Platt et al., 1993). Like *P. parasitica*, these species exhibit a variety of feeding habits.

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Bull. Chicago Herp. Soc. 33(12):263-265, 1998

HerPET-POURRI

by Ellin Beltz

1998 remembered

April 28: "Venoms secreted by Gila monsters and Mexican beaded lizards have been analyzed chemically and found to bear a close resemblance to a human enzyme associated with blood pressure control." The results were announced at a regional meeting of the American Chemical Society. [New Orleans, LA *Times-Picayune*, from Ernie Liner]

May 3: "An enormous crocodile attacked and devoured a Costa Rican tourist after the man dived into a river to free a stuck fishing line. . . . 'People tried to help him, but every time they got close the crocodile went mad and they had to run for their lives,'" said an official of the local Red Cross. [South Florida *Sun-Sentinel*, from Philip Averbuck]

May 15: "The Food and Drug Administration. . . approved Merck and Company's Aggrastat, a medicine inspired by the venom of an African snake. . . . It could help prevent up to 40,000 heart attacks and deaths." [Houma, LA *Courier*, from Ernie Liner]

June 1: A three-year-old frog named "Pretty Lady" won this year's Calaveras County Frog Jumping Contest in three hops totaling 19 feet, 4 inches. The frog "jockey" is a second-generation Calaveras County Frog Jumping contestant. He works in high-tech and races frogs for fun but admits that ever since he was a kid he just liked going out and catching frogs. [Eureka, CA *Times-Standard*, from Bradford Norman]

June 16: An alligator warning was issued by a sheriff in southwestern Ohio after several people reported seeing one in the Great Miami River. A state spokesman pointed out that even though Ohio issues permits for the keeping of exotic animals, it has no specific legislation on the release of exotics and suggested the alligator might have been a pet released after it got "too big." [Bucyrus, OH *Telegraph-Forum*, from Bill Burnett]

July 11: A 31-year-old Virginia man was bitten by a copperhead while "helping a parking lot attendant capture the snake." He said, "I had it pinned and when I lifted it up into the bag, it wiggled itself loose and just sank its fangs on my knuckles." When he arrived at the hospital, he identified the snake as a boa constrictor, but later "with the help of Internet pictures," identified the snake as a copperhead. He said has learned something. He said that he has learned "you stay away from it. [To say] 'Oooh, a snake, pick it up!' that's what a 3-year-old would do. It definitely goes to show you that you should not do idiotic things.'" [*Washington Post*, from Kathy Bricker]

July 23: Police in Elsa, Texas, were in hot pursuit of an 8-foot runaway python that slipped away from its backyard pen during a 100-degree heat wave. Three officers checked ditches and looked under houses and parked cars, but were unable to find the snake. So citizens were asked to keep away from the animal and call for help if they saw it. [*The Daily Texan*, from Carl Gans]

July 31: Officials at the Jakarta, Indonesia, airport were expecting a shipment of eels to wiggle some while being X-rayed before loading, but one noticed that they were "more active than usual." When the package was opened, 1,020 cobras spilled out. [Baton Rouge, LA *Advocate*, from Ernie Liner]

August 1: "Arkansas first lady Janet Huckabee can be seen in the latest edition of *Sports Illustrated* brandishing an axe over a 52-inch rattlesnake. . . . [She] joined Cathy Keating, wife of Oklahoma Governor . . . to hunt rattlers in April's Mangum Rattlesnake Derby, . . . the town's 33rd annual celebration. [Little Rock, AR *Democrat-Gazette*, from Bill Burnett]

August 6: An autopsy on 18 sea turtles found mutilated on Texas beaches in 1997 revealed that the cut wounds on the turtles were typical to wounds caused by "the crushing jaws and teeth of a large shark" not by knives or axes as had been suggested. The autopsies could not reveal if the turtles were killed by the sharks or if the damages happened after the turtles were killed in some other way. Both the environmentalists and the shrimpers claimed there was "spin" on the report; each side claimed it benefitted the other side more! [Houma, LA *Courier*, from Ernie Liner]

August 10: The National Marine Fisheries Service equipped an enforcement team with small, fast boats capable of sneaking up on fishermen and found no serious TED violations and a decline in the number of dead sea turtles washing ashore. The government announced a new era in relations between the shrimp industry and regulators. [New Orleans, LA *Times-Picayune*, from Ernie Liner]

August 12: "Frogs falling silent across USA. Amphibious animals of all kinds are disappearing at an alarming rate. Are humans responsible? Scientists have yet to find a definitive answer." [*USA Today*, from Bill Burnett]

August 26: Newspapers around the country picked up a story out of Los Angeles about homeless and aggressive iguanas. Seems they came into the U.S. as "cute little pets" and have now grown to their usual four to six foot of temperamental white meat and nobody knows what to do with them anymore so they are abandoned to feast on the neighbors' jacaranda and give junior reporters something to write about on an otherwise slow news day. Sooner or later, situations like this lead to laws and so it is no surprise to read that the L.A. Animal Regulation Commission now requires owners to buy $70 iguana permit and pet stores to disclose specific details on the animals' lifespan, dietary needs, vitamins/light/humidity requirements, and potential risks of disease and handling events. The law was passed because local shelters are too full of unwanted iguanas and have been forced to put some down because there is no place to put them anymore. [*Chicago Tribune*, from Claus Sutor and Ray Boldt]

August 26: "A Brazil, Indiana, couple was convicted of trying to get money from Taco Bell by putting a withered frog in a taco . . . they bought in 1997. . . . [They] told Taco Bell's insurance representative that" they would go to the media with

their story if they didn't get from $50,000 to $75,000. A jury has just convicted the couple of fraud and false reporting, although the defense attorney said that the "jury disregarded polygraph results indicating the [couple] were telling the truth.' [Little Rock, AR *Democrat-Gazette*, from Bill Burnett]

August 27: "Copperhead venom may curb breast cancer" screamed headlines over a story about a report at the annual meeting of the American Chemical Society. However, it's a case of asp not because you cannot receive, yet. The test subjects were mice because as one researcher put it, they could "milk all the snakes in the world to get enough [venom] for a clinical trial." He added, "Obviously, that's not practical." Researchers hope to find a way to reproduce the natural protein in volume in the lab so trials in humans can be planned. [*Washington Times*, from Mark Witwer]

August 28: A suburban Washington, D.C., woman personally paid $3,000 for four signs asking motorists to give turtles "a brake." The signs were installed between Leesburg and Dulles International Airport. [Little Rock, AR *Democrat-Gazette*, from Bill Burnett]

September 2: "Raging rivers swamped new areas in northern India . . . with cobras and vipers threatening a countryside ravaged by three weeks of flooding. . . . Nearly 10 million people in 23,300 villages in Uttar Pradesh [state] were driven from their homes, stranded by high waters or lost their livelihoods. . . ." [Little Rock, AR *Democrat-Gazette*, from Bill Burnett]

September 6: Scores of loggerhead turtle nests in Tampa were wiped out by Hurricane Earl which came ashore at Panama City on the Florida Panhandle. Nests were damaged by high waves, being stuck under high water and drowned, or by being buried under huge piles of new sand thrown ashore during the storm surge. [Leesburg, FL *Daily Commercial*, from Bill Burnett]

September 8: "Forget Viagra; hundreds of people in Alcala de la Selva, Spain, are turning to a fertility toad—with no unpleasant side effects. With torches lighting their way in the dark of night, residents climbed a hillside . . . to pay homage to a 17-foot-square rock formation that looks like a toad and overlooks [their town]. . . . According to legend, touching the creature three times—no need to kiss it—under a full moon will make great things happen. [University of New Mexico *Daily Lobo*, from J. N. Stuart]

September 16: "Reptile smugglers snared. . . . 'Operation Chameleon' nets arrests in alleged smuggling ring in which rare creatures fetch as much as $30,000. . . . The indictment against the four men [arrested] charges them with conspiracy, smuggling, money laundering and violations of wildlife laws. The maximum penalty . . . is 20 years in prison and a $500,000 fine." [*USA Today*, from Bill Burnett]

September 16: "A Pasadena, California, man was charged with stealing more than 32 snakes from a storage area behind a pet store and selling them on the street. . . . 'Snakes are a lot more popular than a lot of people would have imagined,' said . . the manager of the store who had been building his collection of snakes for years." [*Washington Post*, from Kathy Bricker]

September 17: Maryland officials have classified the hellbender as a state-endangered animal. One biologist said, "They've been here millions of years, and we think they deserve to stay." Researchers know where to catch the long-lived amphibians, but have not recorded many eggs or any really young larvae. [*Baltimore Sun*, from Mark Witwer]

September 29: "Large, green Cuban tree frogs have been showing up this year in the most unexpected places . . . [and it's making some people in Brevard County, Florida,] jumpy." [*News-Press*, from Ardis Allen; and the Orlando, FL *Sentinel*, from Bill Burnett]

September 30: "At the Gulf Coast Gator Ranch in Moss Point, Mississippi, . . . residents were trying to figure out how to round up the alligators who floated over the chain link fence. Workers said about 30 gators had escaped" in the aftermath of flooding caused by Hurricane Georges. [*Chicago Tribune*, from Ray Boldt; and the Little Rock, AR *Democrat-Gazette*, from Bill Burnett]

October 2: A 17-year-old fed his pet 8-foot python two rats, then tried to handle it. It bit him and constricted him. His friends called 911. Firefighters analyzed the situation, tried a few preliminary moves and finally cut the snake's head off. [Springfield, MO *News-Leader*, from Mr. Laverne A. Copeland]

October 3: A Homer Township, Illinois, man may face felony charges because state conservation officers found 158 live turtles and 154 pounds of frozen turtle meat at his home—way over the state bag limit. [*Daily Southtown*, from Bob Bavirsha] The *Waukegan News*, October 5, [from Scott Keator] reports that the 158 live turtles were baby turtles and that the 24-year-old man was captured with "a turtle in one hand and burlap bags full of turtles in the back of his El Camino." The man then told officers that his father (in Homer Township) had a pool full of turtles. Officers served a warrant and were shoved by another son. Then on October 9, came the charges for misdemeanor poaching against the 61-year-old father with penalties of up to a year in jail and a $1,000 fine if convicted and battery charges against the son. [*Chicago Sun-Times*, from Ray Boldt]

October 4: An annoyed turtle in Tacoma, Washington, had just had enough of being poked by its 8-year-old owner and so clamped its carapace and plastron shut that the boy couldn't get his finger out! They tried tapping. They tried food. Finally paramedics gave it a tiny whiff of nitrous oxide. The laughing gas worked, the turtle relaxed and the boy got his finger out with only a blood blister. A veterinarian who specializes in turtles was quoted, "That's why they're called box turtles—they can close up tight just like a box." [*Chicago Tribune*, from Ray Boldt, Scott Keator and Claus Sutor]

October 13: "Rescuers race against time to salvage sick sea turtles. Mysterious growths are destroying the hapless creatures." [*USA Today*, from Bill Burnett]

October 16: "A Woodridge, Illinois, man pleaded guilty . . . to selling an endangered Galapagos tortoise to an undercover

officer for the Illinois Department of Conservation for $2,500 in cash in 1993. . . . [The 27-year-old man] admitted he sold an American crocodile, also endangered, in 1993 as well." Sentencing is scheduled for March 1999. [*Chicago Tribune*, from Claus Sutor]

October 19: Forest fires in Santa Barbara, California, which charred 2,200 acres in the Los Padres National Forest have put in danger habitats for state-threatened red-legged frogs and endangered arroyo toads. [*Chicago Tribune*, from Ray Boldt]

Things to do while waiting for January 1 . . .

• Visit the new Canadian Amphibian and Reptile Conservation Network/Réseau Canadien de Conservation des Amphibiens et des Reptiles website <http://www.cciw.ca/ecowatch/dapcan>. It's an interesting work in progress with a full key to their species and volunteer monitoring efforts. They plan to have a quiz by picture and call for Canadian frogs and toads soon. [*Froglog*, August 1998, Number 28]

• Subscribe to *Hamadryad*, the Journal of the Centre for Herpetology, Madras Crocodile Bank Trust, Post Bag 4, Mamallapuram 603 104 Tamil Nadu India. An individual subscription is $35.00, institutional $50. Imagine a year's worth of CHS *Bulletin* all full of Indian herpetology, wrapped in a front and back color cover and plopped in your mailbox and you will understand my delight every time I see the latest from Indraneil Das, Harry V. Andrews, Romulus Whitaker, Romaine Andrews and Luc Gastmans. I really liked the frog picture on the back cover, but found that I read the whole journal from end-to-end, too.

• Follow sea turtle migrations on the Turtle Satellite Tracking System <www.cccturtle.org/sat1.htm>. Sea turtles migrate hundreds to thousands of miles a year as they move from breeding to feeding and back again. [*Chicago Tribune*, September 28, 1998, from Claus Sutor] And watch the releases of green sea turtles on Seven-Mile beach on Grand Cayman <http://www.turtle.ky/webcam.htm>. [Baton Rouge, LA *Sunday Advocate*, from Ernie Liner]

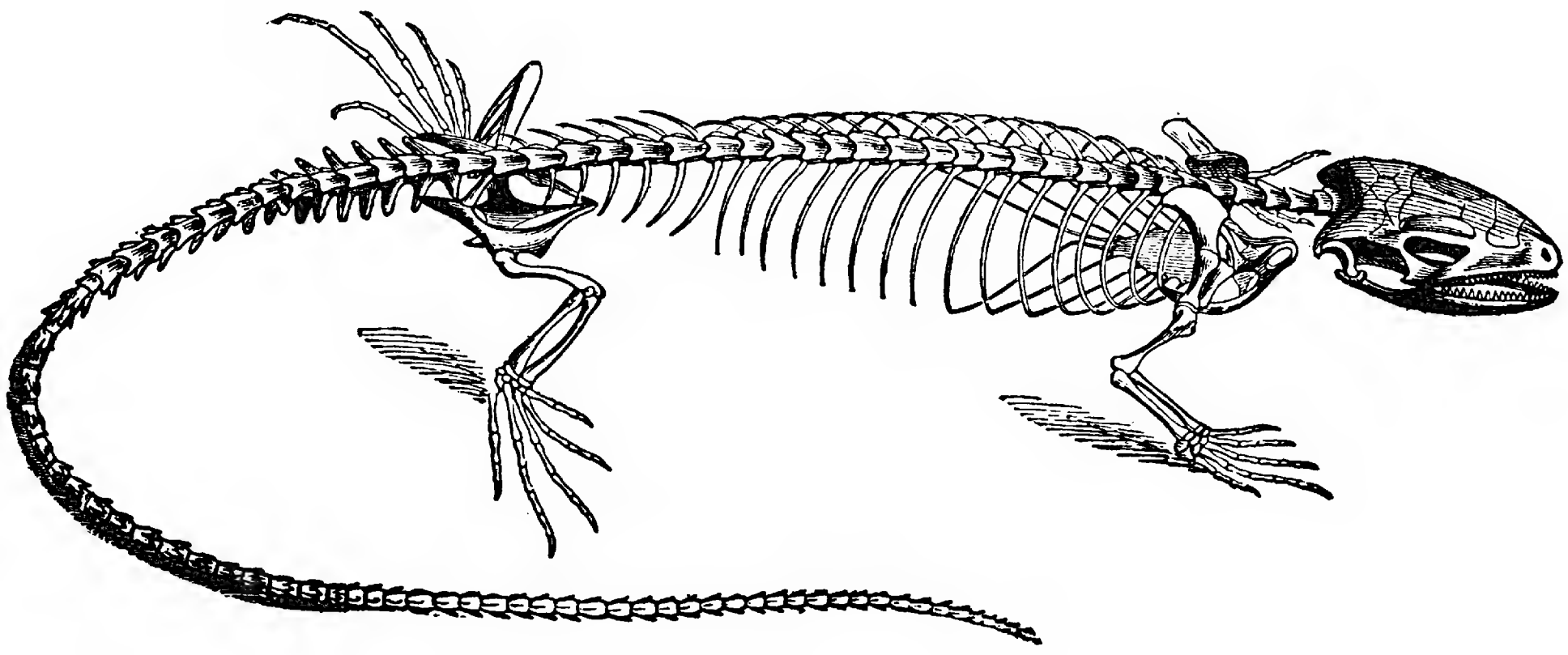
• Adopt a turtle from the Sea Turtle Survival League, part of the Caribbean Conservation Corporation, founded 40 years ago to support the work of the late Archie Carr. For free information, call 1800-678-7853. [Houma, LA *Courier*, June 19, 1998, from Ernie Liner]

• Subscribe to *Moko* and *Herpetofauna* by joining the New Zealand Herpetological Society, P.O. Box 33, 1187 Takapuna, New Zealand. You get to try to find out the exchange rates [Editor's note: roughly US$.53 per New Zealand dollar, as of 12/1/98], but it's $35.00 New Zealand for a single, $40.00 NZ for a family and libraries must enquire from the NZHS Secretary. They have some fabulous books, too. I particularly liked reading about the efforts to conserve and encourage tuatara populations in their native habitat.

Mystery solved

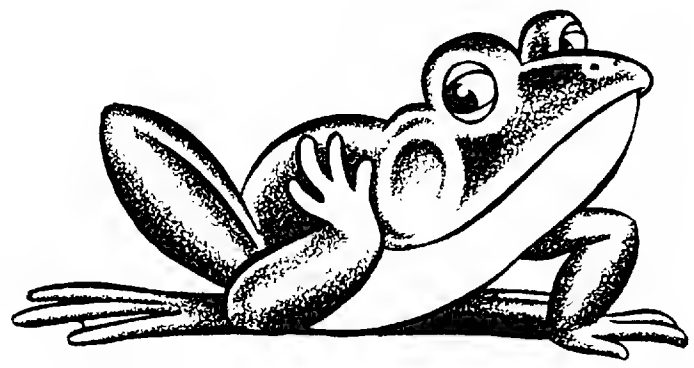
Contributor Ray Boldt writes: "Just a quick note to let you know it was me who had the broken wrist (right). It was so physically hard to write with a cast on that sometimes I would lose my train of thought. Anyway, the cast was removed September 8 and I have been playing catch up ever since."

Thanks to everybody who contributed this month and to Jack Schoenfelder, Ernie Liner, Bradford Norman, Ardis Allen and Tom Taylor. Contributors send pages of newspapers or magazines with the date/publication slug firmly attached and their name on each piece to me: Ellin Beltz, 1647 N. Clybourn Avenue, Chicago, IL 60614-5507.



The Tympanum

A Correction



Fairly early during 1997 Houghton Mifflin, publishers of the Roger Tory Peterson Field Guides, announced to the authors that it was giving the third edition of *Reptiles and Amphibians/Eastern and Central North America* a face-lifting. As the senior author I was not consulted about details, but Collins and I were requested to submit 100 color pictures each for possible inclusion. From these, half were printed in the face-lifted version with appropriate captions. Except for slight changes in the comments about the authors on the inside front cover, the color photographs and their captions are all that is new. Otherwise the text for the third edition (1991) and the new printing (1998) are identical, as may be ascertained by making a comparison of the two books. *The 1998 version is not a fourth edition.* It was not updated. The design of the book was changed drastically with color now on virtually every page, and sweeping changes were made in the way the artwork was arranged. The publisher's intent was obviously to make the book more attractive and to increase sales.

In the October 1998 issue of the *Bulletin of the Chicago Herpetological Society* two pages by James R. Buskirk were published entitled: "Book Review: *A Field Guide to Reptiles and Amphibians of Eastern and Central North America, Third Edition, Expanded.*" In it he was critical and chided us for our incompetence.

It is obvious that Mr. Buskirk assumed that the 1998 printing was a new edition of our book. In fact, on page 216, he refers to it as, "the newest edition of the Peterson Field Guide to eastern and central North American herps."

Unfortunately, Buskirk's review is based on a false presumption. His statement on page 215 that "the authors themselves refer to it as an EXPANDED rather than a REVISED edition," is untrue. Houghton Mifflin was responsible for the use of the word "EXPANDED" and not the authors.

If the new "expanded" printing had indeed been the fourth edition, many of Buskirk's comments and criticisms would be valid, but they are not and should be ignored. **Dr. Roger Conant, 6900 Las Animas NE, Albuquerque, NM 87110.**

November 2, 1998

I just got back from a veterinary and scuba diving meeting in the Turks and Caicos Islands, B.W.I. While there we stayed on Providenciales. Immediately adjacent to this island, which is undergoing rapid development for the tourist and diving trade, is Little Water Cay. This latter island is a nature reserve within Princess Alexandria Park and is home to between 1,500 and 2,000 rock iguanas, *Cyclura carinata.* The Turks and Caicos Islands have a total of 33 protected areas harboring 30,000 rock iguanas, the largest and healthiest population in the Caribbean. Little Water Cay is 150 acres in size and has two small interior lakes.

Access to the island is limited because human habitation is rapidly fatal to rock iguanas. The humans themselves aren't so bad, but the dogs, cats and rodents that invariably accompany man eat the iguanas and destroy their eggs. It requires a boat to reach Little Water Cay and a $3.00 fee to support iguana protection and research is charged. Access requires wading ashore from the anchored boat, as no piers exist. There are two boardwalks which allow tourists to visit the interior of the island while preventing them from inadvertently crushing the iguana burrows which are everywhere. The iguanas are tame and acclimated to the presence of humans. At one time they were fed, and while this is no longer allowed, the iguanas still run to investigate any human bending over just in case a handout is being offered.

The biggest iguanas were about 30 inches in total length. They are a grayish brown in color with a distinct bluish cast. Interestingly, the dorsal crest of spines folded over to one side or the other in most adult lizards. The burrows were common and easily seen, and the lizards were abundant. They were visible on the beach from the boat, and several could be seen by looking in any given direction once we were on shore. There was a definite pecking order, and smaller individuals gave way to bigger ones which came to investigate us. . . .

Herpily, **Stephen L. Barten, D.V.M., Vernon Hills Animal Hospital, 1260 Butterfield Road, Mundelein, IL 60060.**

Unofficial Minutes of the CHS Board Meeting, November 13, 1998

The meeting was called to order at 7:46 P.M. Board members John Driscoll, Jack Schoenfelder and Audrey Vanderlinden were absent.

Officers' and Committee Reports

The minutes of the October Board of Directors meeting were read from the *Bulletin* and accepted.

The Treasurer's report was read and accepted.

Membership: Current membership is 981. Gino Martinez reported that he has received numerous membership renewals in response to the reminder cards he has been sending out.

President: Steve distributed the list of board meeting dates for 1999. No conflicts were apparent.

Shows:

Lori King-Nava reported that the construction at Northeastern Illinois University, venue for the next annual ReptileFest, has fallen behind schedule. Lori and Gary discussed other options available to us at the University. Jennie Picciola received a voice-mail message from Deirdre Graziano at the Juvenile Courthouse. The CHS has been asked to participate in the "Chances for Children" adoption fair again. Deirdre also inquired about our availability for their Christmas party. Steve Spitzer will return her phone call and report to the board with more details.

Nominating Committee: Ron Humbert informed the board that Nominating Chair Ilene Seivert will be unable to attend the election night meeting but that the rest of the committee would handle the elections efficiently so the speaker can begin at **the** usual time. Each candidate will be presented to the general membership and asked to say a few words about himself/herself.

Although the elections and awards have historically been held during the same general meeting, there typically is not a speaker slated for the same evening. In an attempt to not take away from either the awards presentation or the November speaker, the BOD agreed to postpone the annual awards presentation until the December 30 general meeting.

Library: New books purchased at the Midwest Symposium have all been covered and tagged and will be available to members at the November general meeting. Jennie will be sure to get the invoice for these items to the Treasurer.

Old Business

Corresponding Secretary Lori King-Nava passed around a copy of the letter she wrote on behalf of the CHS in support of proposed change in legislation regarding sales of under-four-inch turtles.

Insurance was discussed.

New Business

The CHS has been asked by the Director of Marketing and Communication to participate in a two-day event to celebrate the opening of the new Chicago Academy of Sciences building. The event would take place at the new facility in conjunction with the Halloween holiday of 1999. Discussion ensued.

The National Science Olympiad is being held May 14-15, 1999, and is being hosted by the Field Museum, the Shedd Aquarium and the University of Chicago. Ron Humbert has been asked to lead the herpetological portion of the event. He will put together an appropriate exam to test the knowledge of these exemplary students in the field of herpetology. Anyone wishing to help Ron with this task should contact him.

The location of the December BOD meeting was discussed.

Round Table

Steve Spitzer taped a radio show that will air locally this weekend.

Jennie Picciola informed everyone that a young man by the name of Justin Wilcox will be attending the next general meeting. Justin is a high school student interested in the field of herpetoculture.

Ron Humbert reminded the board about the annual gift to the Illinois Herp Vet Society. He will discuss this with the new Sergeant-at-Arms.

Lori King-Nava thanked Jenny Vollman for the great job she did with the Windy City Pet Expo and congratulated Ron Humbert for the fine turtle talk given at the Miwest Herp Symposium this year.

The meeting adjourned at 8:49 P.M.

Respectfully submitted by Recording Secretary Jennie Picciola

Herpetology 1998

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

A NEW FROG SPECIES FROM CENTRAL INDIA

I. Das and S. K. Chanda [1997, Hamadryad 22(1):21-27] describe *Philautus sanctisilvaticus*, a new species of rhacophorid frog from the sacred groves of Amarkantak, Madhya Pradesh, central India. The new frog is compared with congeners from peninsular India and Sri Lanka. *P. sanctisilvaticus* is diagnosable from Indian and Sri Lankan species in possessing the following characteristics: head wider than long; tympanum small, concealed; webbing on toe IV up to basal subarticular tubercle on the inner side and to the distal subarticular tubercle on the outer side; dorsum brownish-grey, with a dark forehead, the sides of the body with brown and cream reticulations; holotype, a mature male, 20.8 mm SVL; two paratopotypes, both adult females, 19.3 and 23.8 mm SVL.

PAINTED TURTLE BASKING BEHAVIOR

M. A. Krawchuk and R. J. Brooks [1998, Herpetologica 54(1):112-121] observed the basking behavior of 27 male and 86 female adult painted turtles (*Chrysemys picta*) in Algonquin Park, Ontario, from 12 June to 3 August 1994 and from 8 May to 27 July 1995. They compared the frequency and duration of basking by individually marked male and female turtles. Based on the assumption that spring basking by turtles increases the catabolic release of energy by increasing metabolic rate, they predicted that females would bask more frequently and, or, longer than males prior to nesting to support egg development and during nesting to enhance aerobic activity. Females basked more frequently and longer than males from the end of May through June (nesting season). However, there was no difference in basking duration or frequency between the sexes either early in May or following nesting, and intrasexual differences in basking behavior had no detectable relationship to either the date of oviposition or whether females laid one or tnvo clutches of eggs. Therefore, a correlation between basking behavior and egg development remained unsupported, but females may bask more during oviposition to raise body temperature and enhance aerobiosis.

SOUTH AFRICAN LEOPARD TOADS

J. C. Poynton and A. J. L. Lambiris [1998, African J. Herpetology 47(1):3-12] note that the leopard toad of the southwestern tip of Africa has appeared under the names *Bufo pantherinus*, *Bufo cruciger*, *Bufo regularis* and *Bufo pardalis*. This paper examines the nomenclatural confusion and proposes a neotype of *B. pantherinus* A. Smith, 1828, to provide stability. The specimen selected as neotype has a record of being handled by Smith, although Smith did not designate type material. This southwestern Cape toad is regarded as being specifically distinct from the very similar *B. pardalis* Hewitt of southeast Africa, and is not assignable to the *B. regularis* complex of African toads. *Bufo cruciger* Schmidt is considered to be a synonym of *B. pantherinus* Smith.

THE RAREST SNAKE IN THE WORLD

K. R. Buley et al. [1997, Dodo, J. Wildl. Preserv. Trusts 33: 104-117] undertook fieldwork on the Caribbean islet of Maria Major, St. Lucia, during September 1997 in an attempt to gather baseline ecological data on the endemic St. Lucia racer, *Liophis ornatus*, arguably the rarest snake in the world. Due to logistical problems, a total of only about 15 working days was spent on the island, and on the neighboring islet of Maria Minor. It was not until the last scheduled day that the first and only racer of the trip was captured. Morphometric data were collected on other species of reptiles found. These included the lizards *Cnemidophorus vanzoi*, *Gymnophthalmus pleei leutkeni*, *Hemidactylus palaichthus* and *Sphaerodactylus microlepis*, and the worm snake *Leptotyphlops bilineata*. Comparisons were also made between the *Cnemidophorus vanzoi* populations of Maria Major and Minor, described by previous workers as being different in appearance. Additionally, a single adult male *Cnemidophorus vanzoi* on Maria Major was force-fed a small radio transmitter, in order to monitor activity and internal temperature. This paper describes the work carried out during the field trip, presents some of the data collected and discusses possible future ecological and conservation efforts for the Maria Islands.

HEAD PATTERNS IN TWIN GREEN TREE PYTHONS

B. Mackness et al. [1998, Herpetofauna 28(1):25-29] report on the birth of twins in a green tree python, *Morelia viridis*. On 28 September 1995, a captive female *M. viridis* laid 13 eggs at the breeding facility of C. V. Terraria Indonesia, in Jakarta. The female (SVL 123 cm) had been taken from the wild from Kepulauan Aru, Indonesia (6°00′S, 134°30′E). The eggs were incubated by the female in a plastic container and all hatched on 17 November 1995, an incubation period of 50 d. Fourteen neonates were counted, indicating that a twin birth had occurred. The two smallest young (only two-thirds the weight of the next smallest) were examined and found to have very similar head markings, further suggesting that they were the twins. The authors speculate that such a similarity in pattern in a set of twins suggests a genetic basis for some aspects of coloration.

THE *ELAPSOIDEA SEMIANNULATA* COMPLEX

D. G. Broadley [1998, African J. Herpetology 47(1):13-23] reviews the status of the three subspecies of the African half-banded garter snake, *Elapsoidea semiannulata*, on the basis of additional material. Typical *E. s. semiannulata* is extensively parapatric with both *E. s. boulengeri* and *E. sundevallii fitzsimonsi* in northeastern Namibia, with no sign of intergradation, so the author reinstates *E. boulengeri* as a full species. *Elapsoidea semiannulata moebiusi* is retained as a west African subspecies with ventral counts usually above 150, whereas the typical form has counts below 150.

Advertisements

American Federation of Herpetoculturists: A nonprofit national membership organization of herpetoculturists, veterinarians, academicians and zoo personnel involved in the captive husbandry and propagation of amphibians and reptiles. Membership includes highly acclaimed magazine, *The Vivarium*, dedicated to dissemination of information on herpetocultural accomplishments, herp medicine, breeding and maintenance, field studies and adventures, enclosure design and much more. AFH membership is $26. Send information requests to: AFH-News, P.O. Box 300067, Escondido CA 92030-0067.

For sale: *Bulletin* boxes, $10 each. Library quality with "Chicago Herpetological Society" imprinted. Each container holds about two years' worth of *Bulletin*s. Send check or money order to Chicago Herpetological Society, 2060 N. Clark Street, Chicago IL 60614. Allow four weeks for delivery.

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail <GrmtRodent@aol.com>.

For sale: murine-pathogen-free rats and mice available in all sizes, live or frozen: pinkies, fuzzies, crawlers, small, medium and large. Frozen crawler mice in lots of 2000, $.17 each. Also available, full grown hairless mice. FOB shipping point. Master Card accepted. Call (518) 537-2000 between 8:00 A.M. and 5:00 P.M. or write SAS Corporation, 273 Hover Avenue, Germantown NY 12526 for prices and additional information.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice since 1989. Our mice are frozen separately and vacuum-packed to greatly extend freezer life by reducing freezer burning and preserving vitamin and nutrient content. We feed our colony a nutrtionally balanced diet of Mouse Chow and four types of natural whole grains and seeds. Prices: pinkies, $25/100; fuzzies, $30/100; weaned, $35/100. Quantity discounts available. Ray Queen, P.O. Box 85, Alpine TX 79831. Call (800) 720-0076 or E-mail us at <mousefac@overland.net>. Fax (915) 837-0156.

For sale: from Bayou Rodents, excellent quality feeder mice and rats. Every size available. Pinks starting at $20/100. Orders are shipped by overnight service Monday thru Thursday. We accept Visa, MasterCard and Discover. For more info, contact Rhonda or Peggy, (800) 722-6102.

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: Herp bags—colors vary, translucent ripcord nylon, super lightweight, extremely durable construction with hot corners sewn in, double seamed. Custom sizes made upon request. Sizes: 46" × 14", $7 each; 24" × 12", $6 each; 24" × 6", $5 each. Shipping fees, $1 for first bag, $.30 each additional bag. Nicole Lechowicz, 2511 S. Illinois Avenue, #104, Carbondale IL 62901, (618) 457-2783.

For sale: Australian herp books. *Australia's Reptiles* by Wilson and Knowles, 1988, 447 pp., 847 color photos, as new cond., $110; *Graeme Gow's Complete Guide to Australian Snakes*, 1989 (1993), 171 pp., numerous color photos, $50; *Dangerous Snakes of Australia* by Eric Worrell, 1961, 68 pp., b & w photos, plastic covers, top of spine peeling, $25; *Dangerous Snakes of Western Australia* by G. M. Storr, 1977 (2nd ed.), 24 pp., b & w photos, softbound, $12; *Encounters with Australian Animals* by Harry Frauca, 1963, 152 pp., many b & w photos, author's personal experiences including 35 pp. on reptiles, $35; *The Puffin Book of Australian Reptiles* by Helen Hunt, 1983, 73 pp., 24 color and many b & w photos, softbound, $l5; *Poisonous Australian Animals* by Dr. Struan Sutherland, 1983, 48 pp., color photos, includes info on snakebite treatment, plastic covers, $12. Last two books are children's books. All books in very good to excellent condition unless otherwise indicated. Orders over $25 include postage, otherwise $2.50. William R. Turner, 7395 S. Downing Circle W., Littleton CO 80122, (303) 795-5128 after 6 P.M. local time and weekends.

For sale: one male and one female Australian redbelly turtles (*Emydura subglobosa*), $200/pair. Wayne Roepke, (847) 398-3733.

For sale: Egyptian tortoises (for captive breeding projects)—captive born 1997 and 1998 hatchlings, $300 each, four for $1000. Also available, 1997 definite males, $350 each; 1998 star tortoise hatchlings, $400 each. John Coakley, Dream Acres, 46 Avery Hill Road, Ledyard CT 06339, (860) 536-8589, M–F, 6–9 P.M. EST, Sat/Sun 9 A.M. - 9 P.M.

For sale: one leopard tortoise, one *sulcata*, both yearlings, $50 each; one 10" male leopard tortoise, $75; one 10" male *sulcata* "with a deformed shell," free. Will sell only to responsible persons who will give the best care. Colin, (773) 784-4669.

For sale: All captive hatched/born. Frilled dragons, 1996 male, $200, two 1998 hatchlings, $100 each; red-footed tortoises, $100 each ($85 each in lots of 10 or more); pancake tortoises, $300 each; lined geckos, $15 each; ocelot geckos, $20 each; corn snakes, Okeetee and red albino 1998 hatchlings, sexed and feeding, $15 each ($10 each in lots of 5 or more), one female red albino breeder, $30, one female Okeetee breeder, $30; rosy boas, sexed and feeding, $40 each. Call for more information—before 10:00 P.M. CST, (918) 342-2159, ask for Linda. [OK]

For sale: '98 c.b. hatchlings still available. Twelve leopard geckos; 15 bearded dragons; 6 California kings; 4 Sinaloan milks; 3 Honduran milks; 3 Stuart's milks. Henry Cohen, 24 St. John's Place, Buffalo NY 14201, (716) 881-6724.

For sale: mated pair of indigo snakes, to Illinois residents only, $1500/pair; male albino (snow) desert phase California kingsnake, $150. Dennis, (708) 484-8191.

For sale: one male and four female tangerine Honduran milk snakes, c.h. 11/98, $65 each; Malaysian blood pythons, c.h. 8/98, all from very red parents, feeding well, $200 each or $150/unrelated pair; two male .c.h '98 African fattail geckos, het for stripe, $30 each; two male and two female c.h. '98 leopard geckos, high yellow, $25 each; six female c.h. '98 albino and regular phase Burmese pythons, eating fabulously, $60 and $35. Individual data cards provided for each snake. Delivery available to Chicago area around Christmas. Call Ed or Sue, 6 P.M. – 10 P.M. EST, (607) 264-3441 or E-mail: <Paradox1@worldnet.att.net>.

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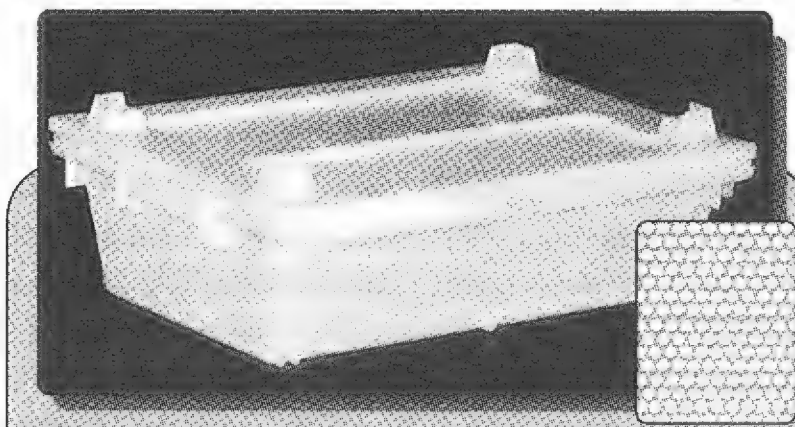

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Bull. Chicago Herp. Soc. 33(12):271-273, 1998

Index to Scientific Names of Amphibians and Reptiles for Volume 33 (1998)

January 1-24
February 25-48
March 49-72

April 73-96
May 97-112
June 113-140

July 141-160
August 161-180
September 181-204

October 205-224
November 225-252
December 253-276

Abronia 20
Acanthodactylus
  bedriagai 182, 184
  boskianus 185
  dumerili exiguus 182, 185
  erythrurus lineomaculatus 185
Acris crepitans 143, 144, 152, 239, 240
Acrochordus arafurae 68
Adelphicos 250
Afroedura 93
Agama impalearis 183
Agalychnis callidryas 212-214
Agkistrodon 32
  contortrix 259, 260
    mokasen 189, 190
  piscivorus 250, 258, 259
    leucostoma 100
Aipysurus laevis 249
Alligator mississippiensis 249
Alsophis
  biserialis 19
    biserialis 19
    dorsalis 19
    occidentalis 19
Alytes
  muletensis 137
  obstetricans 136
Ambystoma 108
  cingulatum 19
  gracile 247
  jeffersonianum 40, 74, 108, 244
  laterale 74, 108, 148
  macrodactylum 247
  maculatum 91, 156, 158, 190
  mavortium 12
  platineum 40, 244
  texanum 40, 239, 240
  tigrinum 12, 135, 143, 144, 166, 262
Amphisbaena 1
  barbouri 108
  carlgansi 108
  cubana 108
Amphiuma means 222
Aneides
  aeneus 189, 190
  ferreus 124
Anolis 20, 63
  carolinensis 62, 192
  chrysolepis 41
  equestris equestris 181
  sagrei 62
Antillophis
  slevini 19
  steindachneri 19
Apalone 91
  mutica 148
  spinifera 144-146, 239, 241
    spinifera 40
Arthrosaura synaptolepis 41
Atractus 250
Batrachoseps 220
  nigriventris 109
  wrighti 109
Bipes 1-5
  biporus 1, 2
  canaliculatus 2
Bitis caudalis 248
Blanus 2
  cinereus 2, 3
  tingitanus 183
Boiga irregularis 31
Bombina variegata 22, 69
Boophis
  tephraeomystax 19
  xerophilus 19
Bothrops 115, 116, 259
  alternatus 259
  asper 113-115, 118
  atrox 116, 117
  jararaca 259
  jararacussu 114
Bufo 161-164
  "alani" 161-163
  alvarius 52
  americanus 74, 135, 143-145, 152, 166-168, 188, 189, 191, 239, 240, 262
    americanus 161-163
  boreas 124-126
    boreas 164-170
  bufo 20, 193
  calamita 20, 69, 193
  calamitas 167
  cavifrons 21
  cristatus 21
  cruciger 268
  fowleri 221, 239, 240
  mauritanicus 183
  microscaphus californicus 174
  pantherinus 268
  pardalis 268
  regularis 200, 268
  spiculatus 21
  terrestris 222
  viridis 41, 183, 200
  woodhousii 191
    fowleri 191-193
Caiman
  crocodilus crocodilus 109, 177
  yacare 177
Callisaurus draconoides 52
Calloselasma rhodostoma 220
Cerastes
  cerastes 187
  vipera 187
Cerberus rynchops 109
Chalcides
  mionecton 185
  ocellatus
    ocellatus 185
    tiligugu 185
Chameleo
  africanus 184
  chameleon chameleon 184
Chapinophis xanthocheilus 250
Charina bottae 109
Chelodina parkeri 232
Chelydra
  serpentina 11, 42, 91, 142, 144, 145, 239, 241
    serpentina 100
Chersodromus 250
Chirotes 2, 3, 4
Chondrodactylus 93
Chrysemys 226, 232
  gaigeae 234
  picta 42, 142, 144, 146, 200, 239, 241, 262, 268
    bellii 228
    dorsalis 99, 100
Clelia
  bicolor 222
  clelia 118
  montana 222
  quimi 222
  rustica 222
Clemmys
  guttata 244
  insculpta 148
Clonophis kirtlandii 244
Cnemidophorus 52, 75-84
  arenivagus 69
  arubensis 69
  exsanguis 11
  grahamii 12
  gularis 158
  gypsi 12
  inornatus gypsi 12
  lemniscatus 69
    splendidus 69
  neotesselatus 75, 76, 79-82
  neotesselatus × sexlineatus 82
  septemvittatus 77
  sexlineatus 6-8, 75-81, 83, 144, 146
  tesselatus 12, 75-84
  tesselatus × sexlineatus 79-80
  tigris 77
    marmoratus 78
  vanzoi 268
Coleonyx 20
Colostethus 92
  atopoglossus 92
  lacrimosus 92
  tamacuarensis 41
Coluber
  algirus algirus 182, 186
  constrictor 9-10, 12, 148, 239, 241
    foxii 9
  florulentus 182, 186
  hippocrepis 186
  nummifer 186
  rhodorachis 186
  rogersi 186
Cophosaurus texanus 52, 222
Corallus
  cooki 40
  grenadensis 40
  hortulanus 40
  ruschenbergerii 40
Crocodylus johnstoni 221
Crotalus 116, 259
  adamanteus 259
  atrox 50, 52, 53, 54, 55, 56, 93, 209, 259
  cerastes 52
  durissus
    durissus 259
    terrificus 259
  horridus 144, 146, 244
  molossus 52, 53
    molossus 260
  pusilus 259
  ruber 209, 258
    ruber 209
  scutulatus scutulatus 258-262
  tigris 52
  viridis 207, 208, 209
    helleri 207, 208, 209
    oreganus 207, 208, 209
    viridis 260
Crotaphytus
  collaris 52
    collaris 20

Cryptobranchus alleganiensis 244
Cyclura
carinata bartschi 176
cornuta cornuta 176
nubila nubila 176
rileyi cristata 176
Cyrtodactylus
adleri 40
lateralis 40
rubidus 40
Daboia
russelii 222
russelii 222
siamensis 222
Deirochelys reticularia 22, 42
Desmognathus
aeneus 220
fuscus 244
fuscus 190
Diadophis punctatus 144, 146
Dilophosaurus 17
Diploglossus
delasagra 136
garridoi 136
nigropunctatus 136
Dipsosaurus dorsalis 52
Discoglossus pictus pictus182
Dyscophus 20
Elaphe
guttata emoryi 244
obsoleta 148, 239, 241
confinis 100
spilioides 100
vulpina 144, 146
Elapsoidea
boulengeri 268
semiannulata 268
boulengeri 268
moebiusi 268
semiannulata 268
sundevallii fitzsimonsi 268
Eleutherodactylus
avius 41
cavernibardus 41
coqui 30-31
cruralis 22
discoidalis 22
memorans 41
zongoensis 22
Emydoidea blandingii 144, 146, 244
Emydura signata 21
Emys orbicularis 183
Ensatina 220
Enhydris plumbea 109
Eublepharis
fuscus 22
macularius 22, 135
Eucritta melanolimnetes 175
Eumeces 3
algeriensis 182, 185, 186
fasciatus 144, 146, 192
laticeps 201, 239, 241
schneiderii 182, 186
aldrovandii 185
Eunectes
barbouri 41
deschauenseei 41
murinus 41
notaeus 41
Eurycea junaluska 136
Gambelia wislizenii 52
Geochelone
carbonaria 233
denticulata 232, 233
Geophis 250
latifrontalis latifrontalis 8
semiannulatus 8
Goniurosaurus 151-152
kuroiwae
kuroiwae 151
orientalis 151
splendens 151
toyanai 151
yamashinae 151
lichtenfelderi
hainanensis 151
lichtenfelderi 151
Gopherus
agassizii 49, 51, 69, 157, 254, 256
polyphemus 42, 221
Graptemys 226, 232
caglei 215
ernsti 216
geographica 148, 232
gibbonsi 216
kohnii 99, 100
nigrinoda delticola 228
ouachitensis 148, 232
pseudogeographica 100, 148, 232
ouachitensis 100
pulchra 216
Gymnophthalmus pleei leutkeni 268
Gyrinophilus porphyriticus 42
Heloderma
horridum 22
suspectum suspectum 50
Hemidactylium 109
scutatum 190, 244
Hemidactylus
palaichthus 268
turcicus 184
lavadeserticus 108
Heterodon
contortrix contortrix 74
nasicus 148, 244
platirhinos 74, 148
Homalopsis buccata 109
Hoplobatrachus occipitalis 200
Hyalinobatrachium crurifasciatum 41
Hyla
andersonii 32
arborea 69
arenicolor 52
avivoca 244
benitezi 41
chrysoscelis 143, 145, 148, 152, 239, 240
cinerea 192, 243
crucifer 74
faber 136
meridionalis 183
regilla 136
versicolor 143-145, 152
Iguana iguana 248
Kinosternon
flavescens 244
sonoriense 52
subrubrum subrubrum 215
Lacerta
agilis 259
vivipara 248
Lachesis 113-123
melanocephala 68, 113, 116, 117
muta 68, 113, 115, 117, 118
melanocephala 68
muta 113, 115-117
noctivaga 113, 117
rhombeata 113, 117
stenophrys 68, 113
rhombeata 113
stenophrys 68, 113-118
Lampropeltis
calligaster 239, 241
getula
holbrooki 192, 259
splendida 52
triangulum 74, 144, 147
Leptotyphlops 222
adleri 222
bicolor 222
bilineata 268
brevicaudus 222
broadleyi 222
cairi 222
debilis 222
fitzingeri 222
gestri 222
hamulirostris 222
longicaudus 222
macrorhynchus
algeriensis 222
bilmaensis 222
macrorhynchus 222
narirostris boueti 222
sundewalli 222
variabilis 222
Limnonectes
limnocharis 108
nilagirica 108
orissaensis 108
Liochlorophis
vernalis 12, 73, 147, 148
Liophis ornatus 268
Lytorhynchus diadema diadema 186
Mabuya 93
quinquetaeniata 186
vittata 186
Macroclemys
temminckii 91, 215, 244
Macroprotodon
cucullatus mauritanicus 187
Malaclemys terrapin 230
Malpolon
moilensis 187
monspessulanus
monspessulanus 187
Masticophis
flagellum 244
piceus 52, 53
ruddocki 208
Mauremys
annamensis 68
leprosa 183
mutica 68
pritchardi 68
Melanosuchus niger 109
Mesalina
olivieri 185
rubropunctata 185
Micrelaps muelleri 136
Morelia viridis 268
Naja 249
kaouthia 249
naja 249
oxiana 249
sagittifera 249
Nannobatrachus 157
Narudasia 93
Natrix
harteri 114
maura 187
sipedon sipedon 74
tessellata 91
Necturus maculosus 142-144
Nephrurus 20
Nerodia
cyclopion 100, 244, 250
erythrogaster 239, 241, 250
fasciata 244, 250
floridana 250
harteri 114
paucimaculata 19
rhombifer 239, 241, 250
rhombifer 100
sipedon 144, 147, 158, 239, 241
sipedon 73, 74
Neusticurus racenisi 41
Ninia 250
Notophthalmus
viridescens

louisianensis 73, 74, 262
viridescens 189, 190
Nototriton 109
picadoi 177
Nyctibatrachus 157
Oedipina 109
Opheodrys vernalis 12
Ophisaurus koellikeri 184
Pachydactylus 93
Palmatogecko 93
Paralipinia rara 22
Paroedura 20
Pelusios subniger 157
Philautus sanctisilvaticus 268
Philodryas hoodensis 19
Phrynosoma solare 52
Pituophis
catenifer
affinis 52
sayi 144, 147
Platemys platycephala 231
Platysaurus capensis 41
Plethodon 38, 188
glutinosus 190
Pleurodeles poireti 182
Podarcis perspicillata chabanaudi 185
Podocnemis expansa 21
Psammodromus algirus 185
Psammophis schokari 187
Pseudacris
brachyphona 188, 189
crucifer 74, 144, 145, 152
crucifer 188
regilla 124-127
streckeri 244
illinoensis 20, 35
triseriata 20, 144, 145, 152, 167, 239, 240
Pseudemys 226, 232
concinna 100, 230, 244
hieroglyphica 100, 216, 228
hieroglyphica × metteri 99
metteri 100, 228
floridana peninsularis 228
nelsoni 228, 230
texana 100, 228
troostii 100
Pseudotriton ruber ruber 190
Ptyodactylus ragazzii 184
Pythonodipsas carinata 93
Rana
areolata circulosa 98
aurora aurora 124
blairi 152
cantabrigensis 74
capito 249
catesbeiana 59, 124, 148, 152, 192, 221, 239, 240
clamitans 74, 144, 145, 148
clamitans 192
esculenta 157
lessonae 157
palustris 144, 145, 189, 190
pipiens 74, 144, 145, 262
ridibunda 157
rugosa 57-59
saharica 183
sphenocephala 239, 240
subaquavocalis 137
sylvatica 58, 74, 147, 148, 152, 158, 212
temporaria 103, 157
utricularia 152, 222
yavapaiensis 52
Rhacodactylus ciliatus 20
Rhadinophanes 250
Rhamphotyphlops bramina 62
Rhineura 2, 3
floridana 2
Rhinocheilus lecontei 52
Rhoptropus 93
Sacalia bealei 231
Salvadora hexalepis 52
Saurodactylus brosseti 184
Sauromalus 248
ater 248
australis 248
hispidus 248
klauberi 248
obesus 248
tumidus 50, 51
slevini 248
Scaphiopus
bombifrons 58
couchii 52
holbrookii 212, 214
Sceloporus
aeneus 69
clarkii 52
occidentalis 135
scalaris 69
undulatus 69
virgatus 69
Scinax acuminata 58
Scincella lateralis 192
Scincus scincus 186
Siren intermedia intermedia 222
Sistrurus 259
catenatus 35, 145, 244, 260
Speleomantes strinatii 220
Sphaerodactylus
elegans 91
microlepis 268
Sphenops boulengeri 186
Stefania tamacuarina 41
Stenodactylus
petriei 184
sthenodactylus mauritanicus 184
Sternotherus odoratus 100, 239, 241
Storeria 114
dekayi 92, 147, 148, 239, 241
occipitomaculata 73, 144, 147
occipitomaculata 190
Tantalophis 250
Tantilla
gracilis 244
yaquia 12
Tarentola
mauritanica 92
mauritanica 184
Taricha granulosa 124-126
Telescopus obtusus 187
Terrapene 157
carolina 216, 239, 241
bauri 41, 216
triunguis 105
ornata
luteola 92
ornata 92
Testudo
graeca 247
hermanni 19
Thamnodynastes pallidus 41
Thamnophis
couchii 136
hydrophilus 136
radix 144, 147
sauritus 244
sirtalis 108, 144, 147, 163, 239, 241
sirtalis 73, 74
Trachemys 225, 231, 232
brasiliensis 233
decorata 234
decussata 234
dorbigni 226, 227, 233
gaigeae 11, 226, 227, 233, 234
ornata 226, 227, 231, 232, 233, 234
scripta 42, 200, 225-236, 239, 241
callirostris 225-236
chichiriviche 232
elegans 21, 91, 99, 215, 226, 228, 231, 232, 233
grayi 233
ornata 225, 228, 232
scripta 226, 228, 232
taylori 228, 233, 234
troostii 226, 228, 232
venusta 233
stejnegeri 234
terrapen 228, 234
Trapelus mutabilis 183
Trimeresurus huttoni 200
Trimorphodon
biscutatus lambda 50, 51
Trionyx
spiniferus 201
triunguis 183
Triturus
viridescens viridescens 74
vulgaris 157
Trogonophis wiegmanni elegans 183
Tropidolaemus
huttoni 200
wagleri 200
Tropiocolotes
tripolitanus algericus 182, 184
Uromastyx
acanthinura 184
maliensis 106
ocellatus ornatus 106
Uroplatus 20
Urosaurus ornatus 12, 52, 221
Uta stansburiana 52, 158
Varanus 101
albigularis 101-102, 220
exanthematicus 20, 101
indicus 108
niloticus 101
salvator 108, 249
yuwonoi 108
Vipera
russelii 222
xanthina 260
Xenopus 173
laevis 175

Bull. Chicago Herp. Soc. 33(12):274-275, 1998

Author–Title Index for Volume 33 (1998)

January 1-24	April 73-96	July 141-160	October 205-224
February 25-48	May 97-112	August 161-180	November 225-252
March 49-72	June 113-140	September 181-204	December 253-276

Attum, O. Herpetology Weekend. 188

Auth, D. L. See Smith, H. M.

Barten, S. L. Letter to the Editor. 266

Bayless, M. See Williams, R.

Beltz, E. HerPET-POURRI. 15, 34, 61, 85, 103, 128, 153, 173, 197, 217, 245, 263

Beltz, E. Letter to the Editor. 156

Blatchford, D. Book Review: *The Reptile and Amphibian Problem Solver* by Robert Davies and Valerie Davies. 6

Blatchford, D. Book Review: *Reptile and Amphibian Variants: Colors, Patterns, and Scales* by H. Bernard Bechtel. 60

Brattstrom, B. H. Forensic Herpetology I: The Rattlesnake in the Mailbox Attempted Murder Case. 205

Brattstrom, B. H. Forensic Herpetology II: The McMartin Preschool Child Molestation Case and Alleged Animal Sacrifice and Torture, Including Reptiles. 253

Buskirk, J. R. Book Review: *A Field Guide to Reptiles and Amphibians of Eastern and Central North America, Third Edition, Expanded* by Roger Conant and Joseph T. Collins. 215

Chamberlain, M. J. See Chiszar, D.

Chiszar, D., J. Cox, M. J. Chamberlain, L. Cox and H. M. Smith Faunal Associations of a Collection of Pre-Columbian Gold Figures from Costa Rica. 25

Chiszar, D. See also Smith, H. M.

Cochran, P. H. Early Herpetological Observations by a Northeastern Wisconsin Conservationist. 73

Conant, R. Pause at Paducah. 97

Conant, R. Letter to the Editor. 266

Cordes, J. E. See Walker, J. M.

Cox, J. See Chiszar, D.

Cox, L. See Chiszar, D.

Crawford, A. J. Letter to the Editor. 176

Delles, C. H. See Levell, J. P.

Fay, L. P. See Holman, J. A.

Fritz, U. Courtship Behavior and Systematics in the Subtribe Nectemydina: 1. The Genus *Trachemys*, especially *Trachemys scripta callirostris* (Gray, 1855). 225

Gilbertson, H., and D. J. Watermolen Notes on Wrinkled Frog (*Rana rugosa*) Tadpoles from Hawaii. 57

Greenbaum, E. Comparison of Three Amphibian and Reptile Population Estimation Methods Used at D'Arbonne National Wildlife Refuge, Union Parish, Louisiana. 191

Hardy, D. L., Sr., and J. J. Silva Haad A Review of Venom Toxinology and Epidemiology of Envenoming of the Bushmaster (*Lachesis*) with Report of a Fatal Bite. 113

Hardy, D. L., Sr. Male–Male Copulation in Captive Mojave Rattlesnakes (*Crotalus s. scutulatus*): Its Possible Significance in Understanding the Behavior and Physiology of Crotaline Copulation. 258

Hartdegen, R. See Russell, M.

Hassler, T. J. See Waters, D. L.

Holman, J. A., and L. P. Fay Racers (*Coluber constrictor*) from a Quaternary Fissure near Rockton, Illinois —An Ancient Hibernaculum?. 9

Horstman, G. P. A Logical, Systematic Analysis of a 177-year-old Herpetological Controversy: The Stephen H. Long Expedition (1820) Amphisbaenid Encounter. 1

Horstman, G. P. Beetle and Toad: An Analysis of the Predator–Prey Relationship of the Predacious Diving Beetle (Coleoptera: Dytiscidae) and Colorado's Endangered Boreal Toad (*Bufo boreas boreas*). 164

King-Nava, L. Letter to the Editor. 176

Kostka, G. Currently Happening Stuff. 13, 37, 64, 88, 106, 131, 171, 194

Kruse, G. See Redmer, M.

Lazell, J., and S. McKeown Identity of the Knight Anole Introduced to Oahu, Hawaiian Islands. 181

Levell, J. P., and C. H. Delles A Preliminary Report on the Herpetology of Fillmore County, Minnesota. 141

Long, C. A. Notes on Development and Mortality in Giant Toads from Washington Island, Door County, Wisconsin. 161

McKeown, S. Notes on a Newly Established Frog, *Eleutherodactylus coqui*, in the Hawaiian Islands.. 30

McKeown, S. See also Lazell, S.

Mierzwa, K. S., and J. G. Palis The Amphibians and Reptiles of Scott Air Force Base and Mid-America Airport, St. Clair County, Illinois. 237

Minton, S. Letter to the Editor. 156

Norman, B. R. See Waters, D. L.

Novotny, R. Book Review: *A Field Guide to the Life and Times of Roger Conant* by Roger Conant. 31

Novotny, R. TV Program/Videotape Review: *Archie Carr: A Naturalist in Florida*. 242

Palis, J. G. See Mierzwa, K. S.

Redmer, M., and G. Kruse Updates to the List of Illinois' Endangered and Threatened Amphibians and Reptiles. 244

Repp, R. Wintertime Observations on Five Species of Reptiles in the Tucson Area: Sheltersite Selections / Fidelity to Sheltersites / Notes on Behavior. 49

Robinson, P. See Smith, H. M.

Russell, M., and R. Hartdegen A Note on the Husbandry and Captive Reproduction of the Eublepharid Gecko *Goniurosaurus* sp.. 151

Silva Haad, J. J. See Hardy, D. L., Sr.

Smith, H. M. Book Review: *A Field Guide to the Life and Times of Roger Conant* by Roger Conant. 33

Smith, H. M., D. Chiszar and D. L. Auth A New Apparent Chromotype of the Potosí Earth Snake (*Geophis l. latifrontalis*). 8

Smith, H. M., P. Robinson, D. Chiszar and F. van Breukelen North African Amphibians and Reptiles in the University of Colorado Museum. 182

Stuart, J. N. Book Review: *Amphibians and Reptiles of New Mexico* by William G. Degenhardt, Charles W. Painter, and Andrew H. Price. 11

Thurow, G. R. Effects of El Niño on Frog Activity in My Neighborhood in Spring 1998. 152

van Breukelen, F. See Smith, H. M.

Walker, J. M., and J. E. Cordes Parthenogenetic *Cnemidophorus tesselatus* Complex (Squamata: Teiidae) at Higbee, Otero County, Colorado: Research between 1950 and 1998. 75

Warner, D. A. A Preliminary Report on a Population of *Cnemidophorus sexlineatus* in Northwestern Illinois. 6

Warner, D. A. Overcrowding Effects on Larval Red-eyed Treefrogs (*Agalychnis callidryas*). 212

Watermolen, D. J. A New Parasite Record from the Tiger Salamander (*Ambystoma tigrinum*).. 262

Watermolen, D. J. See also Gilbertson, H.

Waters, D. L., T. J. Hassler and B. R. Norman On the Establishment of the Pacific Chorus Frog, *Pseudacris regilla* (Amphibia, Anura, Hylidae), at Ketchikan, Alaska. 124

Williams, R., and M. Bayless Tick Removal Behavior by a White-throat Monitor Lizard (*Varanus albigularis*) (Sauria: Varanidae). 101

News and Announcements

1999 CHS HERPETOLOGICAL GRANTS PROGRAM

The Chicago Herpetological Society announces the 1999 CHS Herpetological Grants Program to award financial support for herpetological research, education and conservation. Several awards of up to $500 each will be available. Interested parties may apply for a grant in any one of the following categories:

1. Illinois Herpetology
2. Graduate Student Research in Herpetology
3. Undergraduate Research in Herpetology
4. Field Studies in Herpetology
5. Conservation
6. Captive Management, Husbandry, and Propagation

An attempt will be made to award grants in each category, but depending on the application received, not all categories may receive awards. Some categories may receive more than one award. The Grants Committee reserves the right to reassign the category under which a given proposal is submitted.

Applicants must be members of the Chicago Herpetological Society. In accepting a grant, the recipient agrees to abide by all state and federal laws, to submit a written summary of the project for publication in the CHS *Bulletin*, and to acknowledge the Chicago Herpetological Society in any publications that result from the subsidized research. Recipients are encouraged to submit their work as an article for the CHS *Bulletin*, or to present a program at a CHS general meeting.

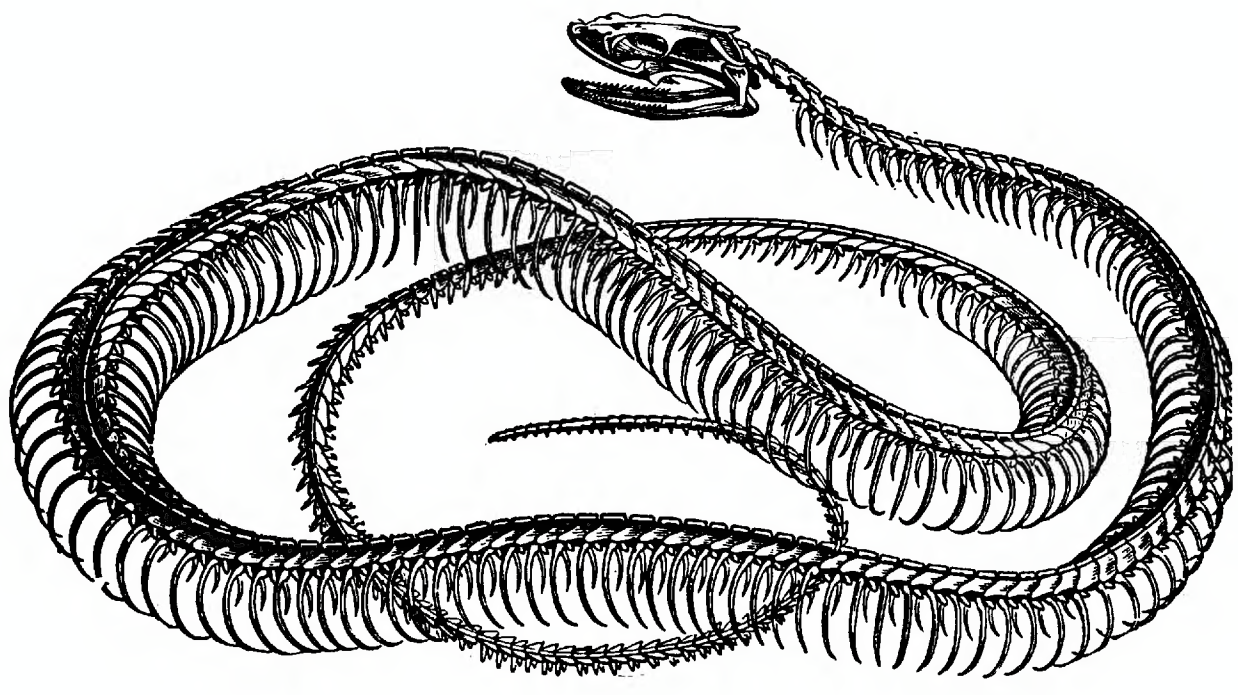
Applications should include the following:

1. Statement of the objectives of the proposal.
2. Description of materials and methods.
3. Complete budget, not to exceed $500.
4. Brief resumé of the applicant, if an individual. If the applicant is an organization, background information on that organization should be included.
5. A completion date for the project.

Applications must be typed, double spaced, and submitted in duplicate. Applications should be kept brief and simple, and proposals longer than three to five pages are discouraged. All applications must be received by 1 April 1999, and awards will be announced by 1 May 1999.

It is the goal of the Grants Committee to award grants to a variety of applicants; enthusiastic amateurs will receive equal consideration with professional herpetologists and graduate students. Topics which might translate into quality CHS *Bulletin* articles or monthly meeting programs are favored, though not requisite.

Submit applications to: Chicago Herpetological Society, Grants Program, 2060 N. Clark Street, Chicago IL 60614. Questions should be directed to John Driscoll, 57 Braemar Drive, Elk Grove Village IL 60007, (847) 439-7226.



UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, December 30, at the Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, in Chicago. The speaker this month will be **John Levell**, of Lanesboro, Minnesota. John, a former Chicagoan and CHS board member, will discuss his book, *A Field Guide to Reptiles and the Law*, which is now in its second edition.

At the January 27, 1999, meeting local veterinarian **Byron De La Navarre** will discuss common reptile disorders and how to treat them.

We are required to use the entrance on the west side of the museum. **We are allowed to use the free parking lot to the west of the museum. Entrance to this lot is from McFetridge Drive, the wide street just to the south, between the museum and Soldier Field.** Public transportation is an option: the Roosevelt Road (12th Street) bus now goes directly to the museum, thus providing a connection with the el and subway. This bus service runs until 11 P.M.

Turtle Club

The Chicago Turtle Club will hold their annual holiday potluck on Sunday, December 27, Noon – 3:30 P.M., at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Everyone is invited! Refreshments, ice, plates, cups and utensils will be provided. Folks need only bring themselves and something to share. Family and friends are welcome. Animals are best left at home . . . as critters and food don't mix! The meeting will feature our CTC web site: <http://www.geocities.com/~chicagoturtle>. For info call Lisa, (773) 508-0034 v/tty.

ELECTION RESULTS

As a result of the elections held November 25, 1998, the following officers and members-at-large will serve on the 1999 CHS Board of Directors.

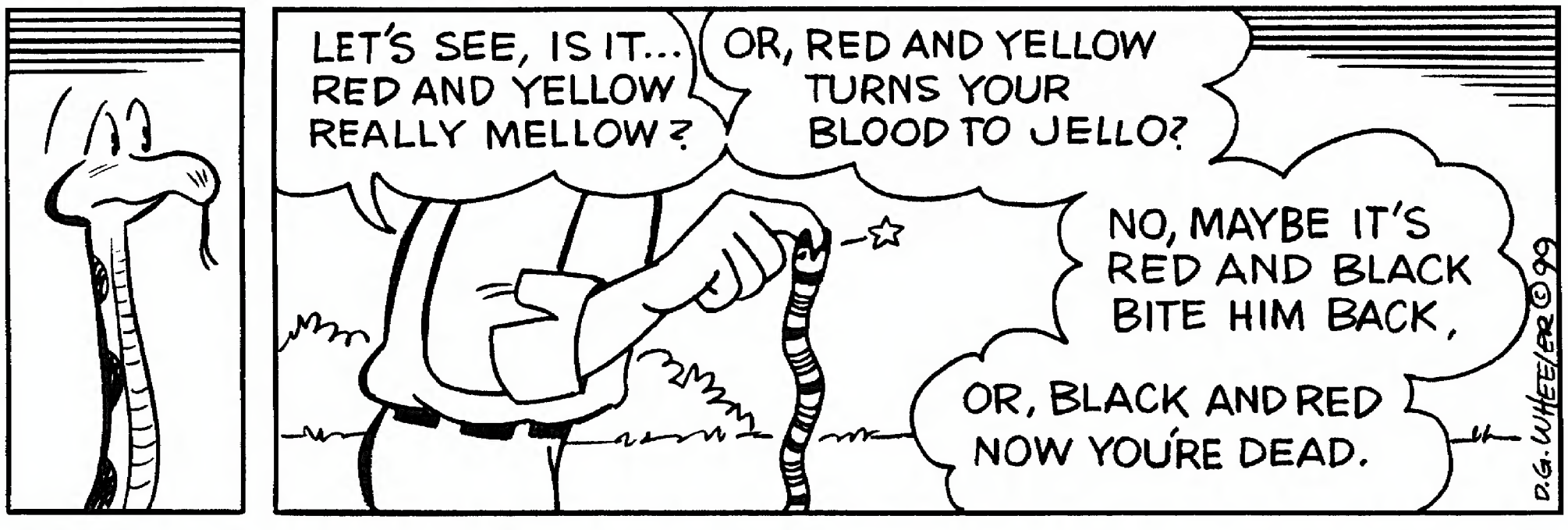
President:	Audrey Vanderlinden	Membership Secretary:	Gino Martinez
Vice-president:	Mike Dloogatch	Sergeant-at-arms:	Greg Brim
Treasurer:	Gary Fogel	Members-at-large:	Jennie Picciola
Recording Secretary:	Karen Bielski		Jenny Vollman
Corresponding Secretary:	Lori King-Nava		Don Wheeler
Publications Secretary:	Lisa Koester		

Steve Spitzer, as immediate past president, will also serve on the board of directors.

MOVING??

Please let us know in plenty of time of any change in your mailing address. The *Bulletin of the Chicago Herpetological Society* is sent to our U.S. members by bulk-rate third class mail. This means that the U.S. Post Office will not forward your *Bulletin* with the rest of your mail. This is so even if you make a special request that your magazines be forwarded (such a request only applies to second class mail).

THE ADVENTURES OF SPOT


LET'S SEE, IS IT... RED AND YELLOW REALLY MELLOW?
OR, RED AND YELLOW TURNS YOUR BLOOD TO JELLO?
NO, MAYBE IT'S RED AND BLACK BITE HIM BACK,
OR, BLACK AND RED NOW YOU'RE DEAD.
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